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Discussion Paper

A DUAL LABOUR MARKET ANALYSIS: A STUDY OF CANADIAN MANUFACTURING INDUSTRIES

Labour Canada Travail Canada

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PREFACE

Research on the dual labour market has received considerable attention from economists and policy makers. Most of the research effort over the past decade has been directed to identifying significant determinants and worker characteristics of segmented labour markets. This supply side approach to the dual labour market was pursued in support of formulating manpower policies concerning mobility, training and youth programs. While studies of this type have dominated, relatively little work has been done on the demand side of the dual labour market. This study of Canadian manufacturing industries focuses on the employers' side and provides a detailed analysis of structural characteristics in the dual labour market context.

The problem with dual labour market analysis is the lack of criteria with which to divide a given labour market. Using a dual wage structure approach, this study categorizes industries (at the three digit SIC level) into either primary or secondary markets. This division of manufacturing industries by relative wages (high versus low) is then tested by discriminant and regression analysis.

The empirical work reveals a significant difference in structural characteristics between high and low wage sectors in manufacturing industries. There are large differences in variables measuring output and production capacity, while variables related to labour are

comparable in size. The study also found that there were only small differences in measures of profitability between the two sectors. Concerning occupational characteristics, the evidence suggests that labour in the high and low wage sectors are non-competing groups leaving little room for mobility without the proper skills and training.

This study not only provides information for policy analysis but also describes employer characteristics as compared to worker characteristics already known from the dual labour market literature.

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CHAPTER I

INTRODUCTION

Over the past decade a number of economists in the United States have developed what is called a "dual labour market" theory. Much of this work has been empirical and heavily oriented toward the specific policy problems of poverty and unemployment.

The socio-economic problems in the urban areas of the United States that gave rise to this idea during the 70s did not occur in Canada; here regional employment issues attracted more attention. More recently, however, references to dual labour markets have become more frequent in policy discussions in Canada.

The dual labour market theory is a variation on a more general theoretical construct called "segmented labour markets."[1] This theory classifies labour markets dichotomously into a primary, high-skilled, high-paid market and a secondary, low-skilled, low-paid market. The theory suggests that workers confined to the secondary sector develop a pattern of "job instability," moving frequently among jobs and into and out of unemployment and labour force participation.

Considerable effort has been directed in the past to identify workers within a segmented market on the basis of their socio-economic

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[1]See, for example, Glen G. Cain, "The Challenge of Segmented Labour Market Theories to Orthodox Theory: A Survey" Journal of Economic Literature, December 1976, Vol. 4, No. 4.

characteristics. These studies were undertaken for use in the formulation of manpower planning policies involving mobility, training, youth programs, and income supplement.[2]

The important determinants of the secondary market have been identified on the basis of such important characteristics as age, sex, education, and wages. But no work has been done on related topics such as the characteristics of the employers of secondary workers, or possible policies directed toward creating "good" jobs (like those existing in the primary market). Such a change of focus would shift the emphasis in dealing with poverty and unemployment from manpower planning and income support to industrial strategy. In adopting such a focus some dualists suggest that the main problem with the labour market is the scarcity of "good jobs" (i.e., "highly paid and stable") and hence the crucial assignment for public policy is to create more good ones, in either the private or the public sector.[3]

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[2]Some of these include: L.C. Thurow, Poverty and Discrimination, (Washington, D.C.), 1969; H. Brown and B. Hymer, "The Negro in the Chicago Labour Market" in Julius Jacobson, ed., The Negro and the American Labour Market, (New York), 1968; T. Vietorisz and B. Harrison, The Economic Development of Harlem, (New York), 1970; B. Bluestone, "The Tripartite Economy: Labour Markets and the Working Poor", Poverty and Human Resources, July-August, 1970; P.B. Doeringer and M.J. Piore, Internal Labour Markets and Manpower Analysis (Lexington, Mass.), 1972; B. Harrison, Education, Training and the Urban Ghetto, (Baltimore), 1972.

[3]See, for example, Michael L. Wachter, "Primary and Secondary Labour Markets: A Critique of the Dual Approach" Brookings Paper on Economic Activity, 3/1974. See also David C. Smith, The Dual Labour Market Theory - A Canadian Perspective, Research and Current Issues Series No. 32, Industrial Relations Centre, Queen's University, 1976.

Although research on the dual labour market has attracted considerable attention from both economists and policy makers, it has not been subjected to such a detailed analysis on the "employer side." The main purpose of this study is therefore to explore the "demand side" of the dual labour market.

First, an attempt will be made to categorize individual firms and industries into either the primary or secondary market. In conjunction with this, statistical tests will be undertaken to validate a notion of market duality from the perspective of employers (i.e., demand side).

Secondly, a descriptive comparison of their industry and occupational characteristics such as the level of productivity and profit, plant and employment size, wage rates of equal work, and skill mix between the two sectors, will be made. This not only provides useful information for policy analysis, but also serves to examine employer characteristics vis-à-vis worker characteristics already known from the dual labour market literature.

Although the aim of this study is to explore the characteristics of the employer side in the dual labour market, its results could have implications for policies designed to create "good jobs."

CHAPTER II

MARKET DUALITY

1. Conceptual Framework

The dual labour market theory is a variation on a more general theoretical framework called the "segmented labour market." The articulation of the concept is due largely to Doeringer and Piore who classified labour markets dichotomously into a primary, high-skilled, high-paid market and a secondary, low-skilled, unstable work force. The flow of labour between these two markets tends to be constrained by artificial barriers.

The concepts developed in the major work by Doeringer and Piore[4] were derived primarily from a series of interviews with management and union officials in more than 75 companies during the period 1964 to 1969, and these employer and union interviews were supplemented by contacts with a variety of civil rights, poverty, and manpower agencies. Since then the dual concept of the labour market has been tested statistically on numerous occasions in the United States and other countries. The findings of these studies were used as a frame of reference for both theoretical and policy considerations.

To explore the employer side of dual labour market, it is necessary to define the primary employers and the secondary employers.

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[4]P.B. Doeringer and M.J. Piore, Internal Labour Markets and Manpower Analysis, (Lexington, Mass.), 1972.

The primary and secondary classifications considered in this study can best be understood as the employer side industry groupings that correspond to the employee side primary and secondary labour markets. They are alternatively, demand side-mirror images of the supply side dual labour market theory which is assumed to exist.

The first task is then to find out those firms and industries whose "majority" of the work force correspond to the characteristics of either the primary or the secondary labour market.

Notable characteristics of employees in both primary and secondary labour markets in a Canadian context can be enumerated below:

Characteristics of Workers

	Primary Labour Market	Secondary Labour Market
1.	Receive high wages	Receive low wages
2.	High educational attainment	Low educational attainment
3.	High worker motivation	Low worker motivation
4.	High work attendance	Low work attendance
5.	Prime age	Peripheral age (too young, too old)
6.	Native born Canadians	Immigrants
7.	Male	Female
8.	More unionized	Less unionized
9.	Less turnover	High turnover

One way to find a list of employers possessing such worker characteristics is to undertake a survey geared to this purpose. Alternatively, some manpower files at CMC (e.g., Canada Manpower Training Program master file) or an establishment survey conducted by Statistics Canada may be used.

However, the resultant outcome would be a cross tabulation of employment for industrial distribution at SIC two digit level. For example, it might indicate that secondary jobs tend to be concentrated in the community/business/personal service industries and the rest of employment may be scattered evenly throughout the rest of the industries. This type of information on "employer side" does not help examine what is intended in this study. In view of such statistical difficulties, a deductive approach is considered, and a sample of manufacturing industries is used for analysis.

Let us suppose that firms and industries in the primary and the secondary markets possess the following characteristics:

Characteristics of Employers

	Primary Market	Secondary Market
1.	Pay high wages	Pay low wages
2.	Provide highly skilled jobs	Provide less skilled jobs
3.	Offer better working conditions	Offer poor working conditions
4.	Mostly full-time and stable jobs	Many part-time and unstable jobs
5.	Custom, equity and due process in the administrative work rules	Arbitrary and capricious supervision
6.	Discrimination in hiring	Indifference to personal characteristics
7.	High productivity	Low productivity
8.	High profitability	Low profitability
9.	Large economies of scale	Small economies of scale
10.	Large market share	Small market share

It would seem that wages are the only characteristic common to both worker and employer (supply and demand) sides. It would also seem that "relative wages" are representative of all other characteristics: if wages are low, then all other worker and employer characteristics in the secondary market would likely follow suit and vice versa; similarly, if wages are high, then the other characteristics in the primary market follow suit and vice versa. Therefore, it would seem logical to use wages as a key variable for dividing the labour market into a primary sector and a secondary sector.

It must be noted that income (i.e., wage) could be an inappropriate measure of market duality in some cases, since some workers may prefer low-paying jobs and enjoy other aspects of employment (e.g., less responsibility and less technical nature), and young workers receiving relatively low wages may just be at the start of their careers and might expect their incomes to increase in later life. But this is unlikely a case for the majority of the work force.

Such a dual wage structure approach may be initially conceptualized within the context of the whole economy. Certain groups of industries can be classified as belonging to either sector. For example, "primary and secondary goods" producing industries consisting of many high-wage paying firms, can be classified as members of the primary sector. Similarly, service industries comprising many low-wage paying firms can be classified as members of the secondary sector. On the other hand, this dual wage structure approach can also be conceptualized within the context of any given industrial sector. For example, automobile

industry within the manufacturing sector can be classified as the member of the primary sector, whereas textile and clothing industries can be classified as the secondary sector members.

Although it would be possible to investigate all of the major industries, data on them are not available to a sufficient degree (at a SIC three digit level), and thus the Canadian manufacturing sector was chosen for the study.

2. Analytical Framework

One of the problems with dual labour market analysis is how we define "relative wages" (e.g., high versus low). If we define, for example, "low-wages" on the basis of the budget-income approach, then the customary method used for drawing the "poverty line" may be considered. But what about "high-wages"?; how high should they be to be high-wages? Let us begin by defining "high-wages" and "low-wages" on a relative notion that wages of one industry are lower or higher than those of another industry. On this basis, the manufacturing industry wage hierarchy can be divided into two parts, a relatively high-wage and a relatively low-wage. The dividing line between these two groups is the average hourly earnings figure for all manufacturing. However, it lacks the conceptual notion of duality.

To incorporate this notion in the analysis, a "poverty line" suggested by Statistics Canada may be considered to delimit a secondary

sector, and a primary sector can further be divided into "upper-tier primary" and "lower-tier primary," as was done in the studies of the United States.[5]

In doing this, an arbitrary method is adopted here. Namely, all industries in which average hourly earnings are 80 per cent or less of the composite figure make up the secondary manufacturing sector whereas those industries where average hourly earnings are 120 per cent or more of the composite figure are included in the upper-tier primary sector. Those industries whose average hourly earnings fall in between these two cutoff points constitute the lower-tier primary sector in manufacturing. Though simple, it should be noted that low income of a family having four persons in the medium sized urban area is very close to the calculated low income which is computed from this method.[6]

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[5]The idea of "upper and lower tier primary market" was mentioned by M.J. Piore (Notes for a Theory of Labor Market Segmentation, Department of Economics Working Paper No. 45, M.I.T., 1972).
See also P. Osterman, "An Empirical Study of Labour Market Segmentation", Industrial and Labour Relations Review, 28, July, 1975.
According to Osterman, upper tier primary jobs possess the following characteristics: higher pay and higher status, greater promotional opportunities, mobility and turnover patterns similar to the secondary market but associated with advancement, lack of elaborate work rules, the presence of internalized codes of behaviour and greater variety and room for individual creativity. Lower tier primary workers, on the other hand, lack a sense of personal commitment or attachement to the final product or service while secondary jobs can be largely characterized as menial.

[6]Data shown in the table below are extracted from a Statistics Canada publication, Income Distributions by Size in Canada, 1976 (Catalogue 13-207 annual).

Low Income Cutoffs of Family Units, 1976

Size of Family Units	Size of Area of Residence	
	500 000 and over	100 000 499 999
	$	$
1 person	4 117	3 853
2 persons	5 966	5 587
3 persons	7 613	7 130
4 persons	9 054	8 478
5 persons	10 121	9 476
6 persons	11 111	10 404
7 or more persons	12 184	11 405

These cutoffs were designed on the basis of 1969 Family Expenditure Survey data and were set at income levels where family units on average spent 62 per cent or more of their income on food, shelter and clothing.

It appears from the table above, that low income of a family having four persons in the medium-sized area starts from a level of $8 478. This figure is very close to the calculated low income of $8 483.80 which is computed using the low-wage sector average hourly earnings of $4.09 in 1976 and 39.89 hours per week of non-office workers in the low-wage sector.

On this basis, the study's global sample population composed of 73 industries (disaggregated at the SIC three digit level) is divided into three sample populations: an upper-tier primary industry sample consisting of 10 industry observations, a lower-tier primary industry sample consisting of 46 industries and a secondary sample of 17 industries. This particular sample is based on the 1976 data.[7]

[7]See Statistics Canada, Employment, Earnings and Hours, Catalogue No. 72-002.

However, more or less the same number of industry observations can be obtained every year, as the rank positions in the industrial wage structure have been stable over several decades. Coefficients of rank correlation values computed in Canada since 1949 have been high. For the periods 1949-56 and 1956-60 values of .95 and .96 have been obtained from a sample consisting of 82 manufacturing industries.[8] This trend seems to have continued as the relevant figure for 1969-76 (based upon this study's sample of 73 manufacturing industries) is .96.

In the following, the primary (upper-tier) and the secondary industries are shown for selected years between 1962 and 1978, respectively. The 'X' beside some industry names for certain years indicates that the industry specified fell into the secondary or the primary, for that particular year. In places where an 'X' is missing it means that the industry did not fall into that group for that year and was a member of the lower-tier primary sector. In the present study, analysis was undertaken only for the two industry groups, i.e., the upper-tier primary and the secondary.

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[8]See S. Ostry and M. Zaidi, Labour Economics in Canada, Vol. II, (Toronto, 1972).

Table 1

The Primary (upper-tier) Industries in Manufacturing

	1962	1965	1968	1969	1971	1975	1976	1978
Breweries	X	X	X	X	X	X	X	X
Tires & Tubes	X	X	X	X	X			
Pulp & Paper Mills	X	X	X	X	X	X	X	X
Printing & Publishing	X	X	X	X	X	X	X	
Iron & Steel Mills	X	X	X	X	X	X	X	
Smelting & Refining	X	X	X	X	X			
Fabricated Structural Metal	X	X	X	X	X	X	X	X
Agricultural Implements	X	X						
Office & Store Machinery	X	X			X			
Motor Vehicles (Assembly)	X	X	X	X	X	X	X	X
Motor Vehicles (Parts/ Accessories)	X	X	X		X			
Petroleum Refineries	X	X	X	X	X	X	X	X
Soap & Cleaning Compounds	X	X						
Industrial Chemicals	X	X	X	X	X	X	X	X
Distilleries		X			X	X		
Boiler & Plate Works			X	X	X	X	X	X
Shipbuilding & Repairing			X		X			
Tobacco Products					X	X	X	X

Table 2

The Secondary Industries in Manufacturing

	1962	1965	1968	1969	1971	1975	1976	1978
Fish Products	X	X	X	X	X	X	X	X
Fruit & Vegetable Canners	X	X	X	X	X	X	X	X
Biscuits	X							
Confectionery	X	X	X	X	X	X	X	X
Rubber Footwear	X	X	X	X	X	X	X	X
Shoes (except rubber)	X	X	X	X	X	X	X	X
Luggage & Small Leather Goods	X	X	X	X	X	X	X	X
Cotton Yarn & Cloth	X					X	X	X
Woolen Yarn & Cloth	X	X	X	X	X	X	X	X
Miscellaneous Textiles	X	X						
Hosiery	X	X	X	X	X	X	X	X
Other Knitting Mills	X	X		X	X	X	X	X
Men's Clothing	X	X	X	X	X	X	X	X
Women's Clothing	X	X	X	X	X	X	X	X
Children's Clothing	X	X	X	X	X	X	X	X
Sash, Door & Flooring Mills	X	X		X				
Household Furniture	X	X	X	X	X	X	X	X
Sporting Goods & Toys	X	X	X	X	X	X	X	X
Plastic Fabricators				X		X	X	X
Household Radios & TVs							X	X
Miscellaneous Electrical Products								X

It should be noted that a unit of sample observation used in the study is an industry and not a firm; therefore, intra-industry homogeneity is assumed. Besides, there are, in fact, no firms paying low-wages in the primary industries: the lowest paid occupational wage rate in 1976 was $5.79. This exceeds significantly 80 per cent of the average hourly earnings of industry composite (i.e., $4.61). On the other hand, very few firms in the secondary sector industries were found to be paying more than 80 per cent of the industry composite.

The analysis was undertaken based on data from both Statistics Canada and Labour Canada. No attempt was made to explore the "qualitative side" of employer characteristics, which are usually obtained through interviews.

3. Tests for Market Duality

The question that may be raised in the methodological context is whether the sectors defined by relative wages are correctly classified so as to distinguish one sector from another. The existing stability of industry wage structure outlined in the previous section suggested this possibility but this can be verified by additional tests.

(a) Discriminant Analysis

Testing correct classification can be performed adequately with discriminant analysis. This analysis distinguishes between the groups with a set of discriminating variables that measure industry characteristics on which the groups are expected to differ. Those discriminant variables can be selected either by stepwise method or *a priori* ground.

The discriminating power of a given variable or a set of variables will be judged by Wilks' lambda, a measure of group discrimination. This test takes into consideration the difference between all the group means and the cohesion (homogeneity) within each group. Consequently, this analysis helps to determine whether there is a high degree of similarity among firms and industries within each sector but dissimilarity between the two sectors. It should be noted that "being similar within but dissimilar between" is a necessary condition to validate the dual labour market theory, as each sector requires different theoretical explanations for their economic activities.

A set of discriminating variables that are considered in this study were taken from the list of employers characteristics shown earlier (see Section (1)).

They are:

1. productivity (i.e., value added per man-hour);
2. profitability (i.e., net profit as per cent of total capital);
3. economies of scale (i.e., land, plant and equipment per worker);
4. market share (i.e., industry shipment as per cent of total manufacturing shipment);
5. working conditions (i.e., standard weekly hours of work per non-office employee).

The method used for discriminant analysis is a stepwise method. Once the discriminant function has been derived, it is possible to pursue the two research objectives of this technique: analysis and classification.

The former provides statistical tests for measuring the success with which the discriminating variables actually discriminate when combined into the discriminant function. This function can be expressed as follows: $Z = d_1X_1+d_2X_X+ \ldots + dnXn$, where Z is the score on the discriminant function, the d's are weighting coefficients, and the X's are the standardized values of n discriminating variables used in the analysis. The weighting coefficients can be interpreted as in multiple regression. In this respect, they serve to identify the variables which contribute most to differentiation along the respective dimension (function).

The latter (classification) comes after the initial computation. Once a set of variables is found which provides satisfactory discrimination for cases with known group memberships, a classification function(s) can be derived which will permit the classification of new cases with unknown memberships. However, we use this as a check of the adequacy of our discriminant function. We can classify the original set of cases to see how many industries are correctly classified by the variables being used. The procedure for classification involves the use of a separate linear combination of the discriminating variables for each group. These produce a probability of membership in the respective group, and the case is assigned to the group with the highest probability.

The results are shown in Tables 3 and 4. Table 3 shows only significant discriminating variables. Three out of five variables--productivity, economies of scale and market share--turned out to be statistically significant. However, the other two variables, profitability and working conditions, failed to be significant. This means that the two sectors--the primary and the secondary--cannot be differentiated by the latter two variables. The implication of such results is, of course, that the structures of the market between the two sectors are not the same, and thus the differences between the two sectors should be taken into account when, for example, we are dealing with policies and programs designed to solve the problems of unemployment and poverty, or when studying the behaviour of firms in general.

Table 4 shows the classification results. All industries in the secondary market are correctly classified, whereas only two industries (out of 10) are not correctly classified in the primary market.

Per cent of "grouped" cases correctly classified is therefore 92.31 per cent. Misclassified industries are (1) boiler and plate works and (2) fabricated structural metals.

Table 3

Discriminant Function

Standardized coefficients:

$Z = 2.25463X_1 - 2.29218X_2 + 0.94174X_3$

Unstandardized coefficients:

$Z = 0.19555X_1 - 0.01573X_2 + 0.49907X_3 - 3.53285$

X_1 = productivity
X_2 = plant size
X_3 = market share

Selection Rule: minimize Wilks' lambda
Wilks' lambda 0.22024
Sample year: 1976

Table 4

Classification Results

Actual Group	No. of Cases	Predicted Group Membership	
		1	2
Group 1 (The Secondary Market)	16	16 100%	0 0.0%
Group 2 (The Primary Market)	10	2 20.0%	8 80.0%
Per cent of "Grouped" Cases Correctly Classified:			92.31%

(b) Regression Analysis

According to the dualists, their major hypothesis in analyzing the primary market is that efficiency plays only a small part in the internal labour market; thus wage rates and jobs are distributed among primary workers according to such factors as custom rather than productivity. However, this concept as articulated by Doeringer and Piore is rather narrowly defined.

What should be discussed here in dealing with market duality is whether the existing wage gap between the two sectors is mainly due to differences in the market structure. In order to examine this point, a wage equation is formulated.

$W = a_o + a_1X_1 + a_2X_2 + a_3X_3 + e$

where w = wage

X_1 = productivity

X_2 = profitability

X_3 = Dummy (the primary market - both the upper-tier and lower-tier = 1, the secondary market = 0)

e = disturbance term.

Variations in wages are industry wage differentials. That is, a measure of skill wage differential. It should be noted that since the industries belonging to each sector are non-competing groups, it is likely that there are very few occupations common to both sectors. This aspect will be more fully discussed in the following chapter.

Therefore, the first independent variable that may be considered is productivity. Profitability variable is chosen as a proxy of a non-market variable. A dummy variable is included to capture the

effect of the differences in the market structure on wage. It estimates the difference in sectors which do not depend on the other independent variables.

Two equations are estimated: one with dummy; another without. The results are shown in Table 5. Since log transformation provides a better fit, all equations are estimated with log values.

Table 5

Regression Results

	Equation 1	Equation 2
	Coefficients and Students' t	
Constant	-0.513	0.321
	(1.813)	(1.333)
Productivity (log)	0.305	0.166
	(7.760)	(4.728)
Profitability (log)	-0.004	-0.025
	(0.165)	(1.226)
Dummy		0.285
		(7.305)
R^2	0.478	0.711
RB^2	0.462	0.698
F Ratio	30.678	54.229
Mean of Wage (log)	1.695	1.695
No. of observations	70	70
Sample Year	1976	1976

It can be seen from Equation 2 in Table 5 that the coefficient of the dummy variable is statistically significant and its coefficient size is fairly big. The R^2 value is also substantially increased from that in Equation 1 (i.e., from 0.478 to 0.711). This indicates that the wage gap existing between the two sectors is not only attributable to productivity differences between the sectors but also due to the

(existing) market duality. The profitability variable did not turn out to be significant. This variable may have an effect on wage changes but not on wage differentials.[9]

[9]It should be noted that the present study is a structural analysis using cross-section data; therefore inter-temporal stability is not considered here. The time-series analysis, however, focuses on wage changes and its determinants. Therefore, primary focus is placed on cyclical variation in the interindustry wage structure. For example, a market model would explain the inter-industry dispersion of wages with such factors as unemployment rate and price. See Michael L. Wachter, "Cyclical Variation in the Inter-industry Wage Structure" American Economic Review (March 1970)

CHAPTER III

COMPARISON OF EMPLOYER CHARACTERISTICS

The present chapter compares both industry and occupational characteristics between the two sectors. This not only provides useful information for policy analysis, but also serves to describe employer characteristics vis-à-vis worker characteristics already known from the dual labour market literature.

1. Industry Characteristics

A number of comparisons were made involving as many as 30 industry characteristics. These industry characteristics are subdivided into five sections as follows:

(a) Performance Variables:

- value of shipment per man-hour;
- value added per man-hour;
- net profit as per cent of sales;
- gross profit as per cent of sales;
- net profit as per cent of total capital;
- gross profit as per cent of total capital;
- net profit as per cent of equity.

(b) Size Variables:

- number of corporations;
- number of establishments;
- sales per corporation;
- industry shipments per establishment;
- land, plant and equipment per establishment;

- land, plant and equipment per worker;
- production labour per establishment.

(c) Share Variables:

- industry value added as per cent of total manufacturing value added;
- industry shipment as per cent of total manufacturing shipment;
- employment as per cent of total manufacturing employment.

(d) Labour Variables:

- average hourly earnings;
- average weekly working hours (actually worked);
- production workers as per cent of total employees;
- female production workers as per cent of total production workers;
- labour payment as per cent of industry shipment;
- labour payment as per cent of value added;
- labour payment as per cent of material costs;
- percentage of production workers covered by union;
- highest paid occupational wage rates;
- lowest paid occupational wage rates.

(e) Working Conditions Variables:

Office Employees

- standard hours of work;
- statutory holidays;
- paid vacations;

- days per week;

- hours per day.

Non-office Employees

- standard hours of work;

- statutory holidays;

- paid vacations;

- days per week;

- hours per day.

(for the data sources, see footnote 10)

Two groups of characteristics are employed in relation to industry performance. The first two variables in Section (a) serve as proxies for assessing industry productivity level, whereas the second group is composed of five variables relating to industry profitability. Two types of profitability variables are used: One, relating profit to sales as profit margin proxies; and the other, relating profit to equity and/or capital as measures of rates of return.

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[10]Industry wage (i.e., average hourly earnings) and average weekly working hours are based on Employment, Earnings and Hours of Work, Statistics Canada; productivity variables (value of shipments per man-hour; value added per man-hour), plus some size variables such as number of establishments, industry shipments per establishment, production labour per establishment, plus all share variables and some labour variables such as production workers as per cent of total employees, labour payments as per cent of industry shipments, value added and material costs are based on data from Statistics Canada, General Review of the Manufacturing Industries of Canada; number of corporations, sales per corporation, land, plant and equipment per establishment, plus profitability variables are based on data from Statistics Canada, Corporation Financial Statistics, percentage of production workers covered by union and all working conditions variables are based on data from Labour Canada, Working Conditions in Canadian Industries; finally, data on skill mix and its wage rates are derived from Wage Rates, Salaries and Hours of Work of Labour Canada.

The first group of performance characteristics is important from a theoretical standpoint in determining the wages industries pay. Neoclassical economic theory states that the factor of production labour is paid a wage rate that is determined by its marginal product. Moreover, in a broad and general way, changes in real wages reflect changes in the real productive capacity of the economy. Profitability is also important in that industries with high profits tend to have high productivity and high wage payments. The implication of profitability comparison for the dual labour market analysis cannot be overlooked, because the question of whether the difference in profitability between the two sectors is marginal or substantial, is closely related to the functioning of free-enterprise system in the economy.

Two types of size characteristics are chosen. The first four variables indicate size of firm and establishment, and the latter three represent size of plant and equipment. In view of the fact that economic theory usually equates low wages and low productivity, and given that the size of plant and equipment may affect economies of scale and specialization which are factors affecting productivity performance, the latter group of characteristics are theoretically very important. Relative to the former group of characteristics one would intuitively expect that there would be more firms and smaller firms in the secondary low-wage sector than in the primary high-wage sector because investment in plant and equipment is usually smaller in the former rather than the latter group.

The three share characteristics (value of shipments as a per cent of total manufacturing value of shipments, value added as a per cent of total manufacturing value-added, and employment as per cent of

total manufacturing employment) constitute proxies for measuring the degree of market concentration. The contribution of the primary industries to total manufacturing output and employment is compared with that of the secondary sector. One of the important characteristics of the primary employer is large output or sales. A large firm would maximize total revenue subject to a minimum profit constraint.[11]

In section (d) Labour, a wide range of characteristics are employed. All have one common property - they constitute indices that relate to the input of labour. Both average hourly earnings and average weekly working hours constitute the first subdivision of labour variables. The second group of variables is concerned with the proportion of production workers and female workers. The third examines relative labour costs in three alternative manners and the fourth supplies information on the degree of unionization. The fifth group of variables are the highest and lowest paid occupational wage rates.

From a theoretical standpoint each of these labour characteristics is important. Average hourly earnings are the basic characteristic employed in this study as they are the key variable used to differentiate the primary high-wage and the secondary low-wage sectors. Thus it is tautological that one expects high wages in the primary sector and low wages in the secondary sector. Relative to average weekly working hours, it is important to note that this refers to the number of hours actually worked, not to 'standard hours'

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[11]Some economists relax the rigid assumption of profit maximization to explain the behaviour of the firm. See, for example, William J. Baumol. Business Behaviour, Value and Growth, (New York: 1959)

of work. If hours worked increase with wages paid one may infer that in general the income effect outweighs the substitution effect in the supply of labour schedule for manufacturing workers.

The proportion of production workers to total employees and female production workers to total production workers should be higher in the secondary sector than in the primary sector. The former tendency may result from the fact that the high-wage sector industries are mostly durable goods industries. In durable goods industries such factors as development of product research, in which many scientists and researchers are engaged, and increased activities in non-manufacturing areas, such as advertising, marketing, financing and training, are prevalent. These factors may mean that high-wage industries have many non-manufacturing employees. The latter tendency pertaining to female production workers may result for several reasons. The increased labour force participation rate for women coupled with skill considerations and social factors may mean that the only jobs most women can get are low-paying jobs.

Relative labour costs should be higher for the secondary low-wage sector industries. This reflects the high degree of labour intensiveness in these industries. The degree of unionization is higher in the primary high-wage sector than in the secondary low-wage sector. Degree of unionization is an institutional variable frequently used for testing a dual labour market hypothesis.

Better working conditions are desirable not only to improve quality of working life in the workplace but also to increase worker productivity. According to the dual labour market theory, frequent

job-turnover and absenteeism are partly due to poor working conditions. Due to the data limitations, examined in this study are standard hours of work, vacations, and statutory holidays.

In order to describe the extent of relative differences in their respective industry characteristics, firstly, sector mean values are calculated using the sample (industry observations) of each sector. Then a ratio is computed between the primary (upper-tier) and the secondary sector mean values. If a significant difference exists in industry characteristics it will show up in that ratio. Ratios of the sector averages with respect to each of the employer characteristics in five areas are shown in Table 6.

(a) Performance

Relative differences in sector averages between the two sectors are apparent for all variables, as all figures are below unity.

Productivity values in the secondary sector are about one-third of the primary sector average. Values relating to profitability of the secondary sector are in between one-half and two-thirds of the primary counterpart (absolute values of sector averages are shown in Appendix I).[12]

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[12]Data have been compiled for both 1976 and 1969 to facilitate the comparison of industry characteristics between sectors. Data for 1969 may be used to check for any anomalies in data for 1976.

Table 6

Comparison of Ratios, 1976

Industry Characteristics	Sector Averages
Sector Ratios	
The Secondary (low-wage)/The Primary (high-wage)	
A. Performance	
Value of shipments per man-hour	.214
Value added per man-hour	.327
Net profit as per cent of sales	.400
Gross profit as per cent of sales	.417
Net profit as per cent of total capital	.699
Gross profit as per cent of total capital	.720
Net profit as per cent of equity	.649
B. Size	
Number of corporations	2.742
Number of establishments	2.478
Sales per corporation	.079
Shipments of goods per establishment	.059
Land, plant and equipment per establishment	.045
Land, plant and equipment per worker	.089
Production labour per establishment	.212
C. Share	
Industry value added as per cent of total mfg. value added	.258
Industry shipments as per cent of total mfg. shipments	.185
Employment as per cent of total mfg. employment	.535
D. Labour	
Average hourly earnings	.600
Average weekly working hours	.946
Production workers as per cent of total employees	1.259
Female production workers as per cent of total production workers	7.473
Labour payment as per cent of value added	1.428
Labour payment as per cent of shipments	1.446
Labour payment as per cent of material costs	1.165
Percentage of production workers covered by union	.750
Highest paid occupational wage rates	.705
Lowest paid occupational wage rates	.551

Table 6 (continued)

Industry Characteristics	Sector Averages
E. Working Conditions	
Office Employees	
Standard hours of work	1.004
Statutory holidays	.943
Paid vacations	.941
Hours per day	1.002
Days per week	1.000
Non-office Employees	
Standard hours of work	1.019
Statutory holidays	.890
Paid vacations	.924
Hours per day	1.014
Days per week	1.024

It must be noted that the existence of a difference in ratio between the two productivity variables is entirely due to the effect of a sudden oil price rise after 1974. If the petroleum industry data is excluded from the primary sector sample, the two productivity ratios are almost identical: .395 for industry shipment per man-hour; .393 for value added per man-hour.

Ratios relating to the two profit margin variables (net and gross profits as per cent of sales, respectively) are on average slightly less divergent than those for the productivity variables. Nevertheless, the difference in profit margin is still quite large (.4 for net profit margin and .417 for gross profit margin).

A lower degree of divergence is apparent in the three rates of return variables. On average, the three proxy values for rate of return in the secondary sector are .689 of what they are in the primary sector.

It can be concluded from the above statistics that the degree of difference between the two sectors is considerably large for productivity variables but generally small for profitability variables. The evidence of a substantially low productivity in the secondary market, relative to the primary market, is consistent with low wages earned by workers, on the supply side of dual labour market.

(b) Size

It was found, as can be seen from Section b), Table 6, that a very large gap generally exists between the two sectors. Therefore, a considerable difference between the primary and the secondary sectors is confirmed.

The fact that there are many small and medium-sized firms and establishments in the secondary sector, is consistent with the secondary labour market composed of mainly young, disadvantaged, old, and women work force.

The plant size variables on the whole reflect the production capacity of firms. It was found that the plant size variable ratios are extremely small except one (i.e., production labour per establishment). In the context of dual market analysis, the small production capacity of a firm on demand side is consistent with less years of schooling and poor employability on the supply side.

(c) Share

The three variables itemized in this section constitute proxies for measuring a degree of market concentration. It is evident that there is a considerable difference in the degree of contribution to both the total manufacturing output and employment between the primary and the

secondary sectors. The difference is significant in terms of shipments as opposed to value added. Both sectors are therefore different from each other in terms of share characteristics.

(d) Labour

In this section, a wide range of statistics is shown. However, all have one common property - they constitute indices that relate to the input of labour. The first group of characteristics consisting of earnings and hours of work show sector mean differences that vary in magnitude. Average hourly earnings in the secondary, low-wage sector are .6 of those in the primary, high-wage sector on average whereas hours worked in the former sector are .946 of those in the latter sector. A fairly large difference exists between sectors for the former characteristic as compared with the latter.

The proportion variables involving production workers and their total wage bills behave in a similar manner (except female production worker variable). However, the difference between the sectors in labour payment as a per cent of the cost of materials is the smallest. The difference in unionization is moderate. Finally, it is found that wages of the lowest paid job in the secondary sector are a little over half of the lowest paid occupational wage rate in the primary sector.

One of the interesting aspects that may be pointed out here is that the size differences enumerated in labour characteristics are not only small between themselves (with the exception of female production worker variable), but also much less in magnitude, compared with those examined in the previous sections (except that in the rate of

return variables). In other words, the degree of size differences in labour characteristics between the two sectors appears to be much less pronounced than in the case of other variables examined earlier.

(e) Working Conditions

Using Working Conditions Survey data from Labour Canada, examined in this section are standard hours of work, statutory holidays, paid vacations, hours per day and days per week.[13] Minor differences in the ratios are apparent between office and non-office employee categories; and sector mean differences in these variables between the two sectors are marginal. However, the degree of difference between the two sectors is shown clearly in the statistics. Namely, ratios of the sector averages regarding standard hours of work are greater than unity, while those of fringes (vacations and holidays) are less than unity.

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[13] Data used for the analysis in this study are weighted averages calculated as follows: A hypothetical example will illustrate the method. Suppose that 90 per cent of the work force in the establishment have the 40-hour workweek, and the remainder have the 35-hour workweek.

(1) Hours of work	(2) % of employees	(1) x (2)
40	90	3 600
35	10	350
	100	3 950

The weighted average of hours of work in the provisions is 3 950 ÷ 100 = 39.5. In those establishments in that year the average standard weekly hours were 39.5.

This is consistent with the dual market notion that in the secondary, low-wage sector, less vacations and longer standard hours of work are usually prevalent, whereas in the primary, high-wage sector, the reverse is true.

2. Occupational Characteristics

Using mainly occupational wage rate survey data from Labour Canada, an investigation of occupational characteristics in both the primary sector and the secondary sector is conducted in this section. A list of occupations belonging to each sector is shown in Appendix II. This will help to determine whether jobs and pay are similar within but dissimilar between sectors. From the standpoint of the supply side dual labour market theory we expect to find a lack of labour mobility between the two sectors but some mobility within each sector. Since the industries in both sectors are non-competing groups, it is likely that there are very few occupations common to both groups. To investigate this possibility, two types of comparisons are made: (1) extra-sectoral comparison; (2) intra-sectoral comparison. The purpose of the former comparison is to identify those jobs common to both sectors. The latter is to identify common occupations within each sector. This gives degrees of similarity and dissimilarity, in terms of skill mix. Wage rates of equal work identifiable within as well as between sectors are also compared. This poses a question of whether the resulting difference in wage payments within the sectors would be due to differences in productivity or because of a temporary disequilibrium.

(a) Extra-sectoral Comparison

Appendix II shows all types of occupations belonging to each sector.[14] It is found that there are few common occupations and thus a high degree of dissimilarity exists between the two sectors. With the exception of shipping clerk, only one industry in the secondary sector has the same type of occupations as the ones in the primary sector. Those occupations are labourer, electrical repairman, stationary engineer, truck driver, and welder (see Table 7).

Its implications are as follows: almost every industry requires special skills, and on the whole the two sectors are non-competing groups; consequently, labour cannot move freely between the two sectors without having a proper skill or training. The dualists suggest artificial barriers imposed on jobs as being a major reason for the lack of both intra and inter-sectoral labour mobility.

Wage rates of the above mentioned occupations are also shown in Table 7. It is clear from the table that significantly different wage payments were made to the same type of occupations. It is not only because of productivity differences between the two sectors but also because of sectoral differences. The wage regression result discussed in Chapter II suggests that the wage gap existing between the two sectors was not only attributable to productivity differences but also to the other factors contributing to the market duality.

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[14]There are 84 different occupations in the primary (upper-tier) sector, and 86 different occupations in the secondary sector.

Table 7

Common Occupations and Wage Rates
Sector Averages, 1976

	The Secondary Low-wage Sector*	The Primary High-wage Sector	Ratio
	$	$	
Shipping Clerk	4.37	6.43	.680
Electrical Repairman	6.43	7.77	.828
Labourer - non-production	4.04	6.26	.645
Stationary Engineer 4th Class - M	4.28	6.98	.613
Truck Driver - light and heavy	4.85	6.62	.733
Welder - Production line	5.07	6.80	.746

*Reflects only one industry observation with the exception of shipping clerk. Averages of shipping clerks in the low-wage sector and other occupations in the high-wage sector are based on at least two and more industry observations.

The dualists place emphasis on factors other than productivity in explaining the differences in pay. Whatever the reasons, this suggests that wage rates of similar occupations would be similar within but not between sectors.

(b) Intra-sectoral Comparison

In this section, an effort is made to identify those occupations which are common to industries within each sector.

According to 1976 data the primary high-wage sector seems to reflect a labour market which is relatively more homogeneous than the secondary low-wage market, in terms of occupational structure.

As many as nine occupations, for example, in the primary high-wage sector, had five or more industry observations (out of a total of 10

industry observations), whereas in the secondary low-wage sector, only one occupation (i.e., shipping clerk) had five industry observations (out of a total of 17 industry observations) - see Table 8.

Table 8

Degree of Wage Variations
in the Same Occupations

Occupation	Coefficient of Variation	Occupation	Coefficient of Variation
The Primary (Upper-tier) Sector		The Secondary Sector	
	%		%
Maintenance Machinist(6)	4.84	Inspector Garments-F(4)	5.44
Stationary Engineer 2nd Cl.-M(5)	4.51	Pocket Maker-F(3)	7.20
Industrial Truck OP-M(5)	7.16	Presser hand-F(3)	3.33
Millwright(5)	9.31	Shipping Clerk(5)	7.10
Welder Maintenance(3)	12.98	Cutter, hand-M(4)	11.00
Pipe fitter Maintenance(3)	1.95	Hand Sewer-F(3)	0.72
Welder Production - M(2)	4.90	Presser hand-M(3)	14.68
Shipping Clerk(4)	10.45	Presser Machine-F(3)	13.57
Stationary Engineer 3rd Cl.-M(5)	5.84	Presser Machine-M(3)	7.60
Carpenter Maintenance(6)	13.65	Sewing Machine OP-F(4)	5.24
Electrical Repairman(5)	6.83	Trimmer hand-F(4)	4.32
Labourer Non-production(5)	13.74		
Stationary Engineer 4th Cl.-M(3)	3.13		
Truck Driver-Light and Heavy(5)	9.24		
Average	7.75		7.29

NOTE: Numbers in bracket are industry observation numbers.

Although the observed number of occupations is small, it gives some indication that, in the secondary low-wage sector, occupational characteristics are much less similar than in the primary high-wage sector. An inference that can be drawn is that the secondary sectors jobs not only pay lower wages but also offer less mobility between industries than jobs provided in the primary sector (except perhaps jobs in the textile and clothing industries).

Next, the extent of wage variation in these occupations is examined in order to see whether or not the same wage payments were made for the same type of work within each sector. It is clear from Table 8 that the size of the coefficients of variation is generally small in both sectors. Such low coefficients values for each occupation is indicative of a general tendency for wages in each sector not to deviate much from the "equilibrium wage".[15] The dualists' view, however, is that non-competitive forces are operating strongly in the primary market, so that even if their productivity is the same, wages of these occupations differ significantly from one industry to another.

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[15]This could be called also "wage norm." The inter-temporal instability which could exist over the short- or medium-term, might result in a temporary disequilibrium.

CHAPTER IV

SUMMARY AND CONCLUSIONS

This study examined the principal characteristics of Canadian manufacturing firms to test the hypothesis that a dual labour market exists from the perspective of employers (demand side).

First, two sectors, the upper-tier primary and the secondary sector, were identified on the basis of relative wage differentials which have long been observed to exist in the manufacturing sector. In order to verify whether or not the sectors defined by such relative wages (high versus low) are correctly classified, a discriminant analysis was undertaken, using a set of discriminant variables such as productivity and plant size variables. The result was satisfactory to the extent that correctly classified per cent of "grouped" cases is 92.31 per cent. In conjunction with this, a regression analysis was undertaken to find out whether the existing wage gap between the two sectors is mainly due to differences in the market structure. The regression result shows that the effect of the differences in the market structure on wages is very significant. Secondly, employers' characteristics, industrial and occupational, belonging to each sector were described in order to show the extent of difference between the two sectors. The results are shown in the accompanying chart. For example, the extent of difference between the two sectors with respect to productivity variable (i.e., value-added per man-hour) is large, but small in the case of profitability (i.e., net profit as per cent of total capital). On the whole, there is a large difference in the sector means of those variables involving output, production capacity, and skill mix whereas those variables related mainly

to the input of labour are of fairly comparable size and showed a small difference between the two sectors. Such a descriptive comparison not only helped provide useful information for policy analysis, but also served to examine employer characteristics vis-à-vis worker characteristics already known from the dual labour market literature.

Summary Chart

	The Degree of Difference between the two Sectors
Performance	
- value added per man-hour	large
- net profit as per cent of total capital	small
Size	
- number of establishments	large
- land, plant and equipment per worker	large
Share (concentration)	
- industry shipments as per cent of total mfg. shipments	large
Labour	
- average hourly earnings	medium
- average weekly working hours (actually worked)	small
- female production workers as per cent of total production workers	large
- labour payment as per cent of value added	medium
- union coverage	small
Working Conditions	
Office employees	
- standard hours of work	small
- vacations	small
Non-office employees	
- standard hours of work	small
- vacations	small
Occupations	
- skill mix	large
- wages of equal work	small

The main conclusion that can be drawn from this study is that the characteristics of employers in the primary sector are significantly different from those in the secondary sector, so that the structures of the market between the two sectors are not the same. This is one aspect of the dual labour market notion which has not been fully tested in the past.

However, this study neither rejects nor accepts the general hypothesis threading through the dual labour market literature, that is, whether the dual model is non-neoclassical. One of the important findings in this study is, however, that although many employer characteristics differ from one sector to another, the extent of difference in profitability between the two sectors is rather small. This seems to suggest that employers in both sectors seek "profit maximization," one of the important characteristics of the free enterprise system.

The policy implications of the dual labour market analysis have been heavily oriented toward the specific policy problems of poverty and unemployment. However, these policy problems have been approached mainly from the supply side of the dual labour market, and thus, the programs administered in the past are mainly directed to manpower training and income support.

Some dualists point out that the main problem with the labour market is the scarcity of "good" jobs (i.e., highly paid and stable), and hence these policy problems should be approached from the demand side.

Investigation of the Canadian manufacturing sector conducted in this study suggests that this labour market problem results primarily from the structural imbalance existing in the labour market which consists of, for example, two layers--the upper and lower, which is referred

to as the primary and secondary in the dual labour market literature. Given such a dual structure in the labour market, the crucial assignment for public policy is to expand the primary sector. Since there is little incentive for the secondary sector employers to expand plant capacity to create good jobs, this assignment heavily burdens the government. For example, policy makers will likely face a dilemma when designing programs for reducing both unemployment and poverty at the same time. It is because the cost of creating a high-wage job is extremely high, compared with the cost of creating a low-wage job, as can be inferred from the following statistics.

Year - 1976	Industry Wages	Land, Plant and Equipment per Worker
	$	$
(1) The primary high-wage sector average	7.31	105 410
(2) The secondary low-wage sector average	4.09	9 400
(3) Difference between (1) and (2)	3.22	96 010

Given a series of linear relationships between wages and productivity, and between productivity and production capacity, it can be said that the additional cost of creating one high-wage job would be $96 010, which is about 10 times the cost of creating one low-wage job. Therefore, if we create low-wage jobs because of our preference for their small capital requirements, it would tend to perpetuate low income although the unemployment rate might stabilize.

The dual sector approach is helpful to zero-in on strategic areas for job creation; policy makers may use a strategy which utilizes comparative advantage in cost-effectiveness. For example, it would be

much less expensive to create a job in the lower-tier primary sector than in the upper-tier primary sector. It is, however, possible that the long-term net cost to the government of high-wage job creation may not exceed the cost of creating "bad" jobs, when consideration is given to indirect costs and/or direct and indirect benefits. However, this present study is not aimed directly at the benefit/cost assessment, and hence it would be very difficult to reach a conclusion on the basis of "measured" cost-effectiveness.

Industrial Characteristics

Appendix Table I-A

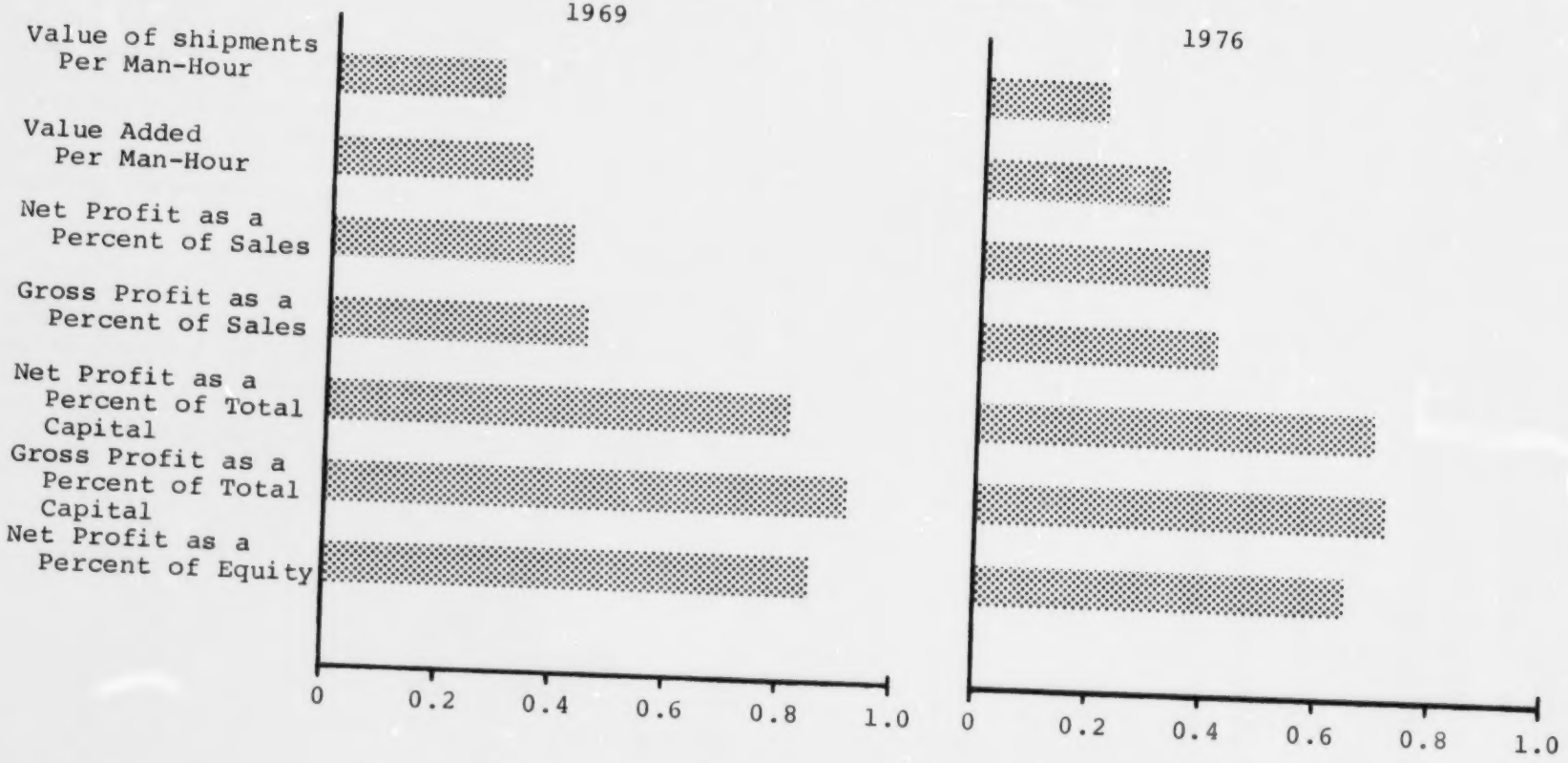
Performance Variables

	Sector Averages			Sector Coefficients of Variation	
	Low Wage	High Wage	Ratio	Low Wage	High Wage
1976	$	$		%	%
Value of shipments per man-hour	20.73	96.92	.214	39.6	139.2
Value added per man-hour	9.47	28.79	.327	33.3	55.2
Net profit as a per cent of sales	2.19%	5.47%	.400	60.1	34.9
Gross profit as a per cent of sales	3.68	8.83	.417	53.0	35.5
Net profit as a per cent of total capital	6.49	9.29	.699	67.3	43.7
Gross profit as a per cent of total capital	10.92	15.17	.720	56.0	45.7
Net profit as a per cent of equity	8.99	13.86	.649	61.8	32.4
1969					
Value of shipments per man-hour	9.86	34.02	.290	30.3	89.3
Value added per man-hour	4.61	13.48	.342	26.7	40.8
Net profit as a per cent of sales	2.36%	5.59%	.422	51.7	39.2
Gross profit as a per cent of sales	4.28	9.38	.456	43.9	39.1
Net profit as a per cent of total capital	5.58	6.84	.816	40.7	51.2
Gross profit as a per cent of total capital	10.87	11.87	.916	31.6	54.3
Net profit as a per cent of equity	8.87	10.47	.847	42.2	31.9

PERFORMANCE VARIABLES

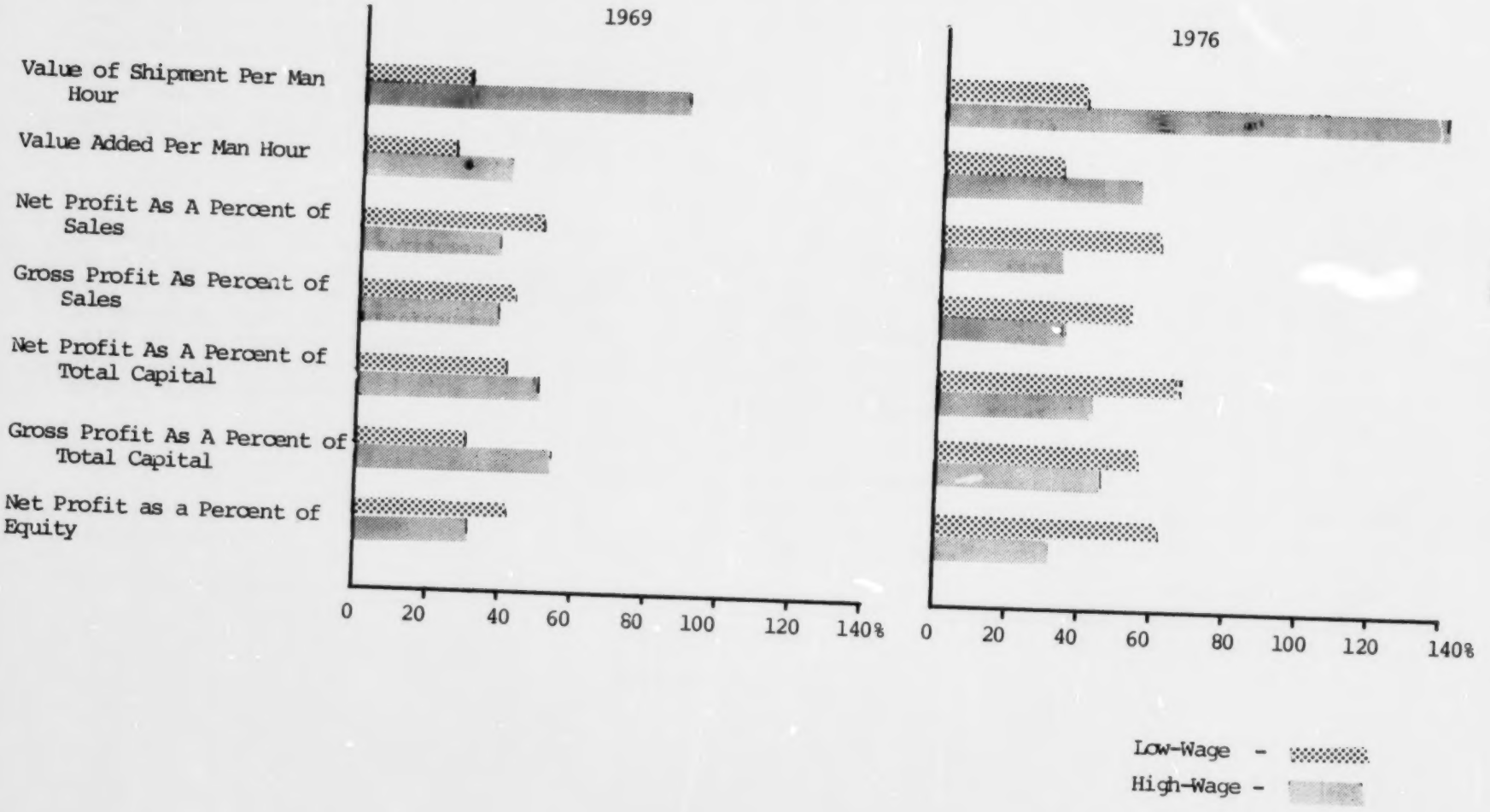
COMPARISON OF RATIOS

(Low-Wage Sector / High Wage Sector)



PERFORMANCE VARIABLES

COEFFICIENT OF VARIATION


1969
1976
Value of Shipment Per Man Hour
Value Added Per Man Hour
Net Profit As A Percent of Sales
Gross Profit As Percent of Sales
Net Profit As A Percent of Total Capital
Gross Profit As A Percent of Total Capital
Net Profit as a Percent of Equity
0 20 40 60 80 100 120 140%
0 20 40 60 80 100 120 140%
Low-Wage -
High-Wage -

Appendix Table I-B

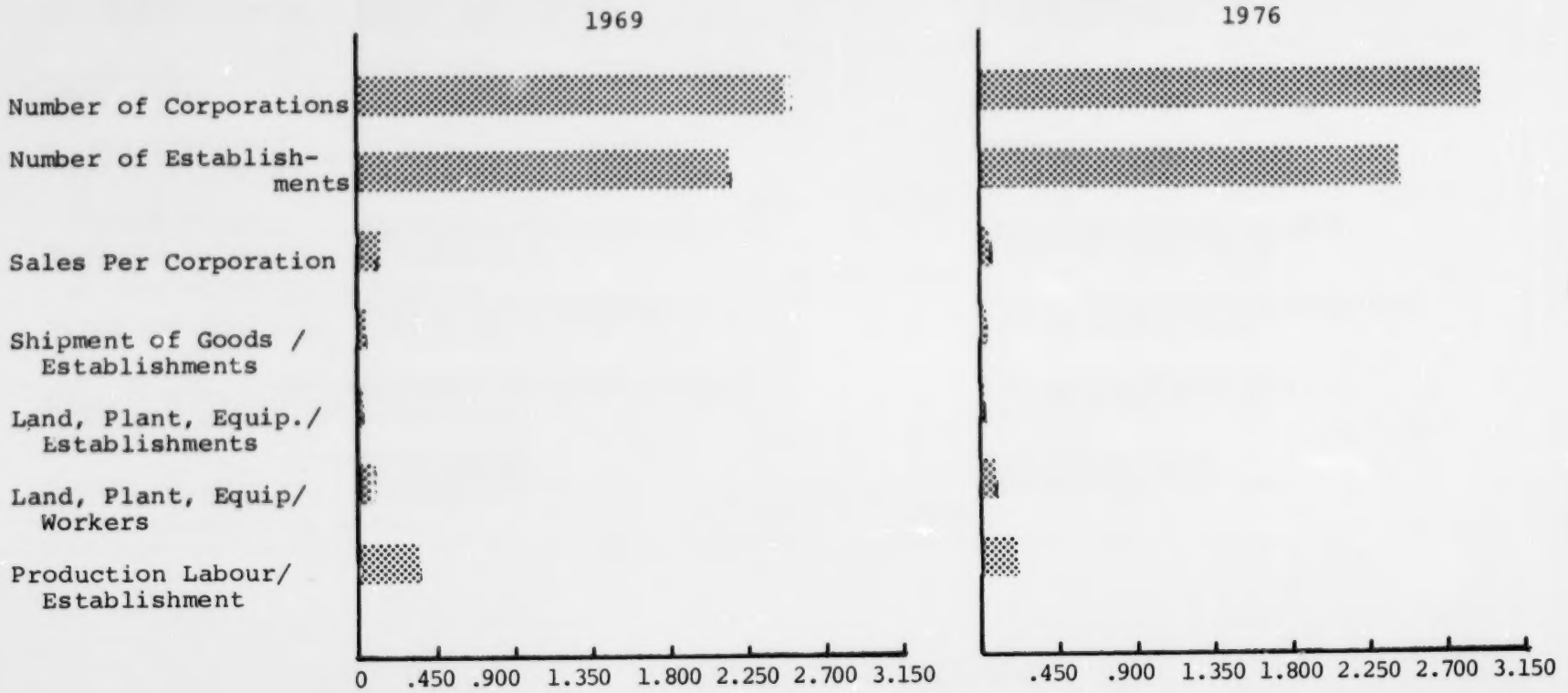
Size Variables

	Sector Averages			Sector Coefficients of Variation	
	Low Wage	High Wage	Ratio	Low Wage	High Wage
1976				%	%
Number of corporations	448.12	163.40	2.742	118.8	92.8
Number of establishments	316.50	127.70	2.478	107.7	123.0
Sales per corporation ($ million)	4.90	61.91	.079	109.6	166.2
Shipments of goods per establishment ($1 000)	3 893.05	65 487.62	.059	113.1	140.2
Land, plant and equipment per estab. ($1 000)	1 002.88	22 256.71	.045	127.2	120.8
Land, plant and equipment per worker ($1 000)	9.40	105.41	.089	82.3	195.0
Production labour per establishment	80.91	381.72	.212	85.7	119.9
1969					
Number of corporations	341.38	141.45	2.413	85.4	68.4
Number of establishments	263.75	121.82	2.165	87.5	147.3
Sales per corporation ($ million)	2.31	16.59	.139	98.2	123.2
Shipments of goods per establishment ($1 000)	1 691.59	31 318.67	.054	97.3	139.4
Land, plant and equipment per estab. ($1 000)	412.52	8 506.07	.048	134.9	130.1
Land, plant and equipment per worker ($1 000)	4.71	41.82	.113	88.5	148.8
Production labour per establishment	104.42	425.26	.387	99.1	99.3

SIZE VARIABLES

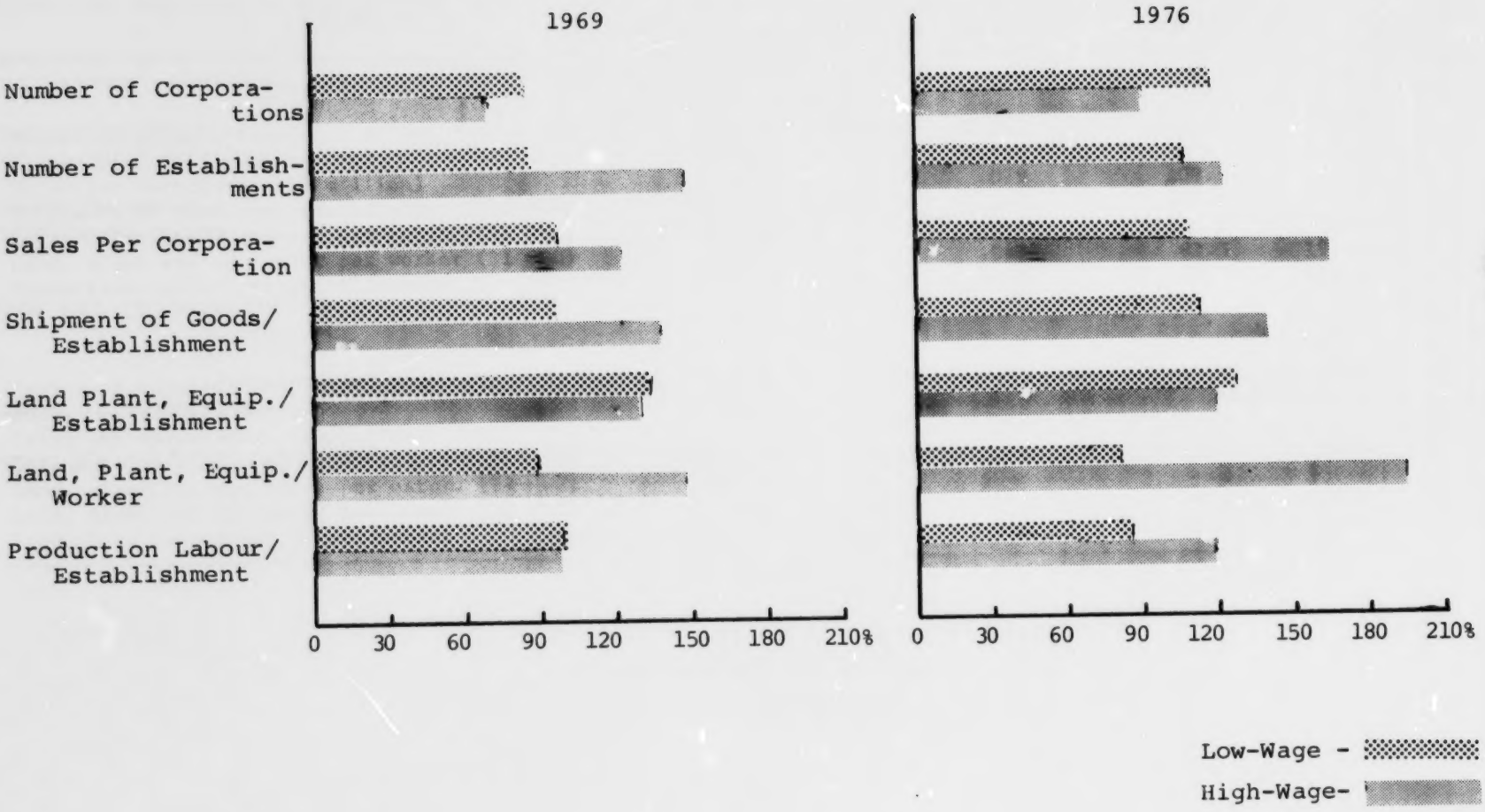
COMPARISON OF RATIOS

(Low-Wage Sector / High-Wage Sector)



SIZE VARIABLES

COEFFICIENT OF VARIATION



Appendix Table I-C

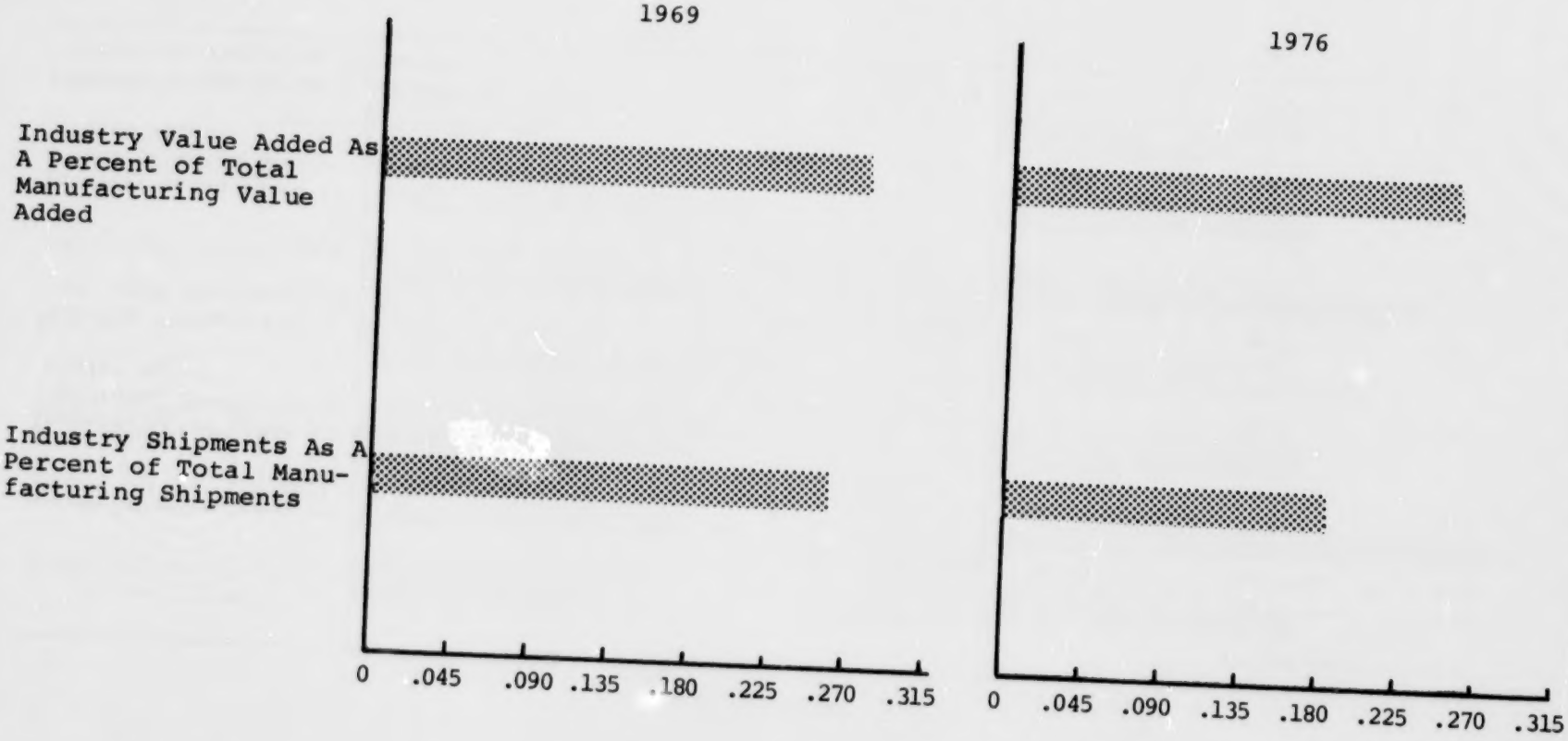
Share Variables

	Sector Averages			Sector Coefficients of Variation	
	Low Wage	High Wage	Ratio	Low Wage	High Wage
1976	%	%		%	%
Industry value added as a per cent of total manufacturing Value Added	.6461	2.5076	.258	64.3	75.4
Industry shipments as a per cent of total manufacturing Shipments	.5614	3.0264	.185	64.0	87.4
1969					
Industry value added as a per cent of total manufacturing Value Added	.6417	2.4300	.283	59.1	69.0
Industry shipments as a per cent of total manufacturing Shipments	.5976	2.4509	.262	59.4	96.3

SHARE VARIABLES

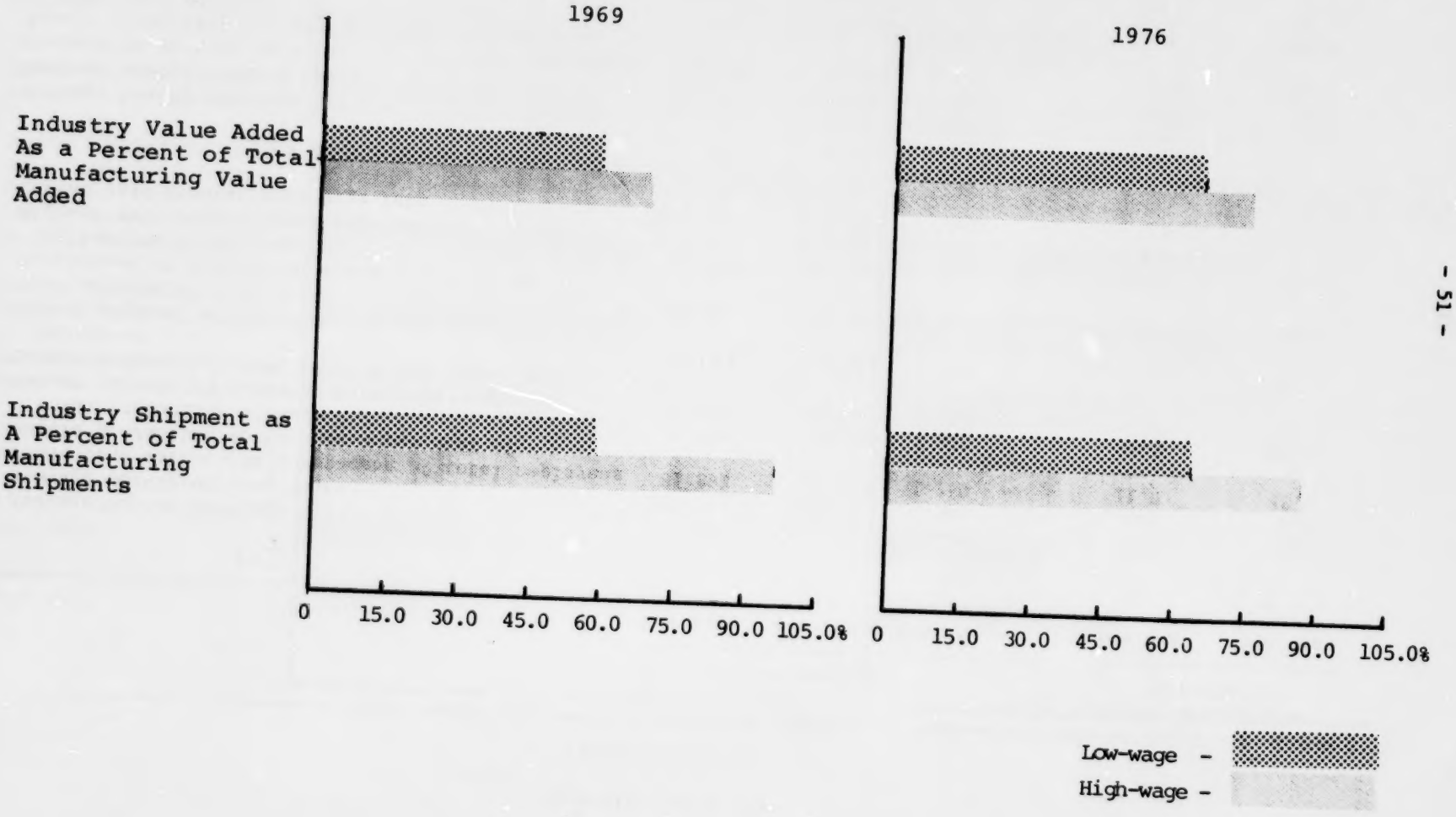
COMPARISON OF RATIOS

(Low-Wage Sector / High-Wage Sector)



SHARE VARIABLES

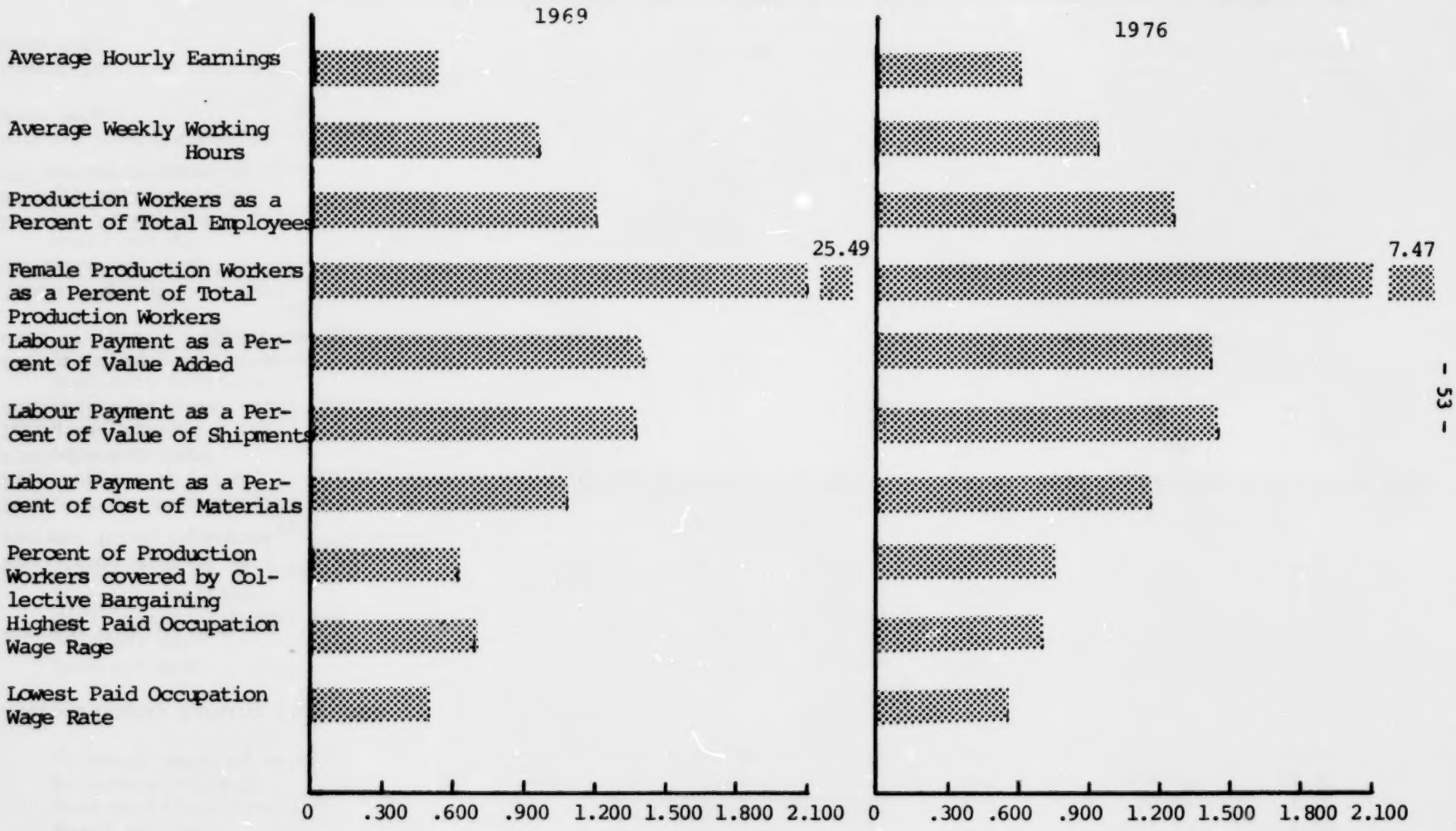
COEFFICIENT OF VARIATION

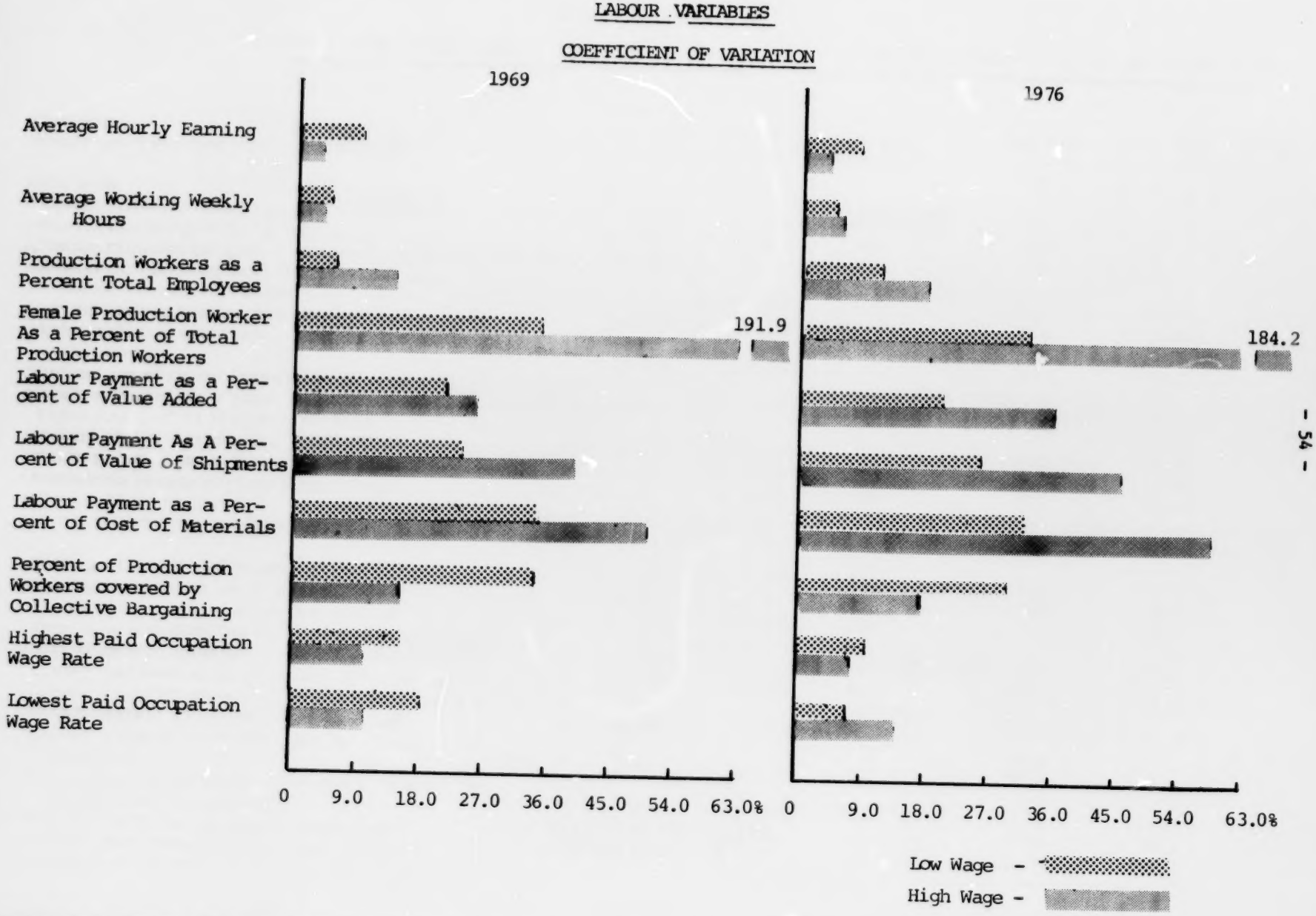


Appendix Table I-D

Labour Variables

	Sector Averages			Sector Coefficients of Variation	
	Low Wage	High Wage	Ratio	Low Wage	High Wage
1976				%	%
Average hourly earnings	$ 4.09	$ 7.31	.600	8.1	3.5
Average weekly working hours	$37.02	$39.14	.946	4.9	5.8
Production workers as a per cent of total employees	81.89%	65.05%	1.259	11.0	18.0
Female production workers as a per cent of total production workers	54.70%	7.32%	7.473	33.0	184.2
Labour payment as a per cent of value added	44.35%	31.05%	1.428	20.5	36.2
Labour payment as a per cent of the value of shipments	21.05%	14.56%	1.446	26.4	46.2
Labour payment as a per cent of the cost of materials	40.42%	34.70%	1.165	32.3	59.0
Percentage of production workers covered by collective bargaining	64.31%	85.70%	.750	30.0	17.6
Highest paid occupational wage rate	$ 6.46	$ 9.16	.705	9.9	7.9
Lowest paid occupational wage rate	$ 3.19	$ 5.79	.551	7.1	14.5
1969					
Average hourly earnings	$ 1.92	$ 3.57	.538	8.9	3.1
Average weekly working hours	$38.93	$40.68	.957	4.7	3.9
Production workers as a per cent of total employees	83.36%	69.32%	1.204	5.3	15.3
Female production workers as a per cent of total production workers	53.03%	2.01%	25.493	35.1	191.9
Labour payment as a per cent of value added	43.67%	30.62%	1.416	20.7	26.7
Labour payment as a per cent of the value of shipments	21.36%	15.26%	1.363	23.2	41.0
Labour payment as a per cent of the cost of materials	43.12%	37.54%	1.083	34.8	51.4
Percentage of production workers covered by collective bargaining	53.92%	86.09%	.626	34.3	16.3
Highest paid occupational wage rate	$ 2.78	$ 4.01	.693	16.6	10.5
Lowest paid occupational wage rate	$ 1.46	$ 2.84	.514	18.9	10.6


LABOUR VARIABLES
COMPARISON OF RATIOS
(Low-wage Sector / High-Wage Sector)
1969
1976
Average Hourly Earnings
Average Weekly Working Hours
Production Workers as a Percent of Total Employees
Female Production Workers as a Percent of Total Production Workers
Labour Payment as a Percent of Value Added
Labour Payment as a Percent of Value of Shipments
Labour Payment as a Percent of Cost of Materials
Percent of Production Workers covered by Collective Bargaining
Highest Paid Occupation Wage Rage
Lowest Paid Occupation Wage Rate
25.49
7.47
0 .300 .600 .900 1.200 1.500 1.800 2.100
0 .300 .600 .900 1.200 1.500 1.800 2.100


LABOUR VARIABLES
COEFFICIENT OF VARIATION
1969
1976
Average Hourly Earning
Average Working Weekly Hours
Production Workers as a Percent Total Employees
Female Production Worker As a Percent of Total Production Workers
Labour Payment as a Percent of Value Added
Labour Payment As A Percent of Value of Shipments
Labour Payment as a Percent of Cost of Materials
Percent of Production Workers covered by Collective Bargaining
Highest Paid Occupation Wage Rate
Lowest Paid Occupation Wage Rate
191.9
184.2
0 9.0 18.0 27.0 36.0 45.0 54.0 63.0%
0 9.0 18.0 27.0 36.0 45.0 54.0 63.0%
Low Wage -
High Wage -

Appendix Table I-E

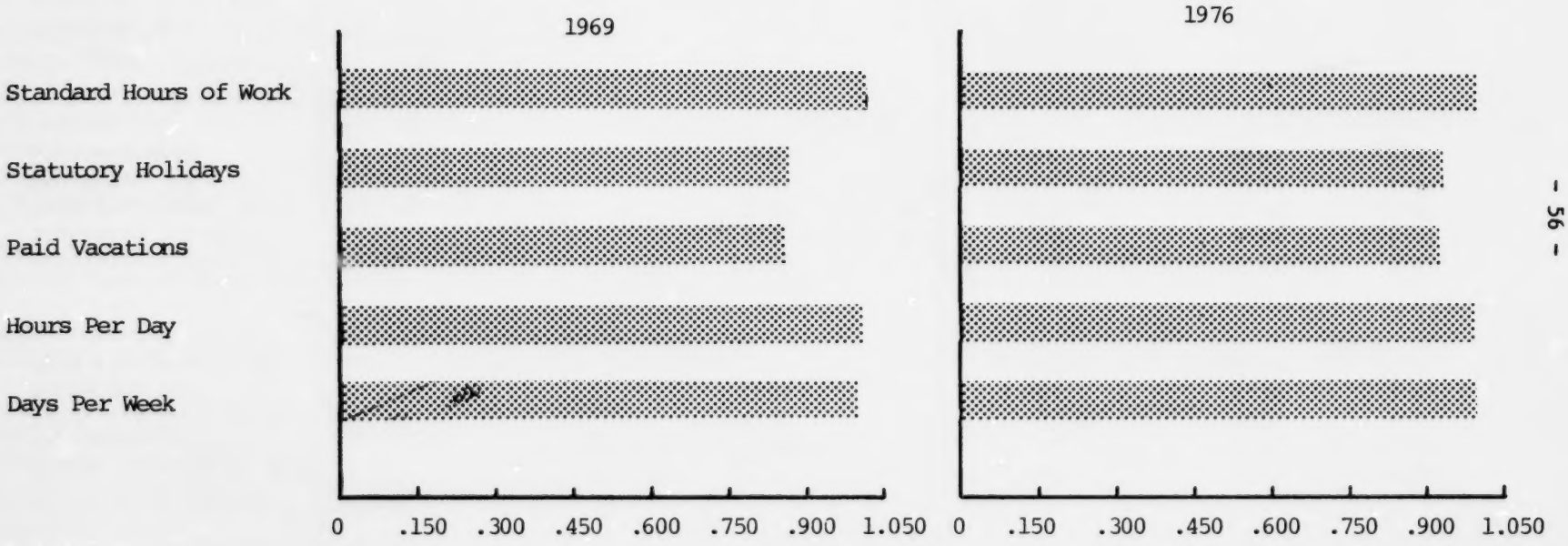
Working Conditions Variables

	Sector Averages			Sector Coefficients of Variation	
	Low Wage	High Wage	Ratio	Low Wage	High Wage
				%	%
Office Employees 1976					
Standard hours of work	37.47	37.29	1.004	4.51	4.32
Statutory holidays	10.29	10.91	.943	7.27	13.10
Paid vacations (week)	2.88	3.06	.941	4.79	4.37
Hours per day	7.36	7.34	1.002	2.36	3.84
Days per week	5.0	5.0	1.000	0.12	0.0
1969					
Standard Hours of work	37.85	37.24	1.016	1.71	3.57
Statutory holidays	8.20	9.21	.890	8.66	7.72
Paid vacations (week)	2.59	2.97	.872	9.49	0.87
Hours per day	7.45	7.35	1.013	1.98	2.36
Days per week	5.03	5.0	1.006	0.84	0.0
Non-office Employees 1976					
Standard hours of work	39.89	39.12	1.019	2.93	3.73
Statutory holidays	9.96	11.19	.890	8.36	9.11
Paid vacations (week)	2.80	3.03	.924	6.19	2.50
Hour per day	7.93	7.82	1.014	2.69	3.88
Days per week	5.01	4.98	1.024	0.91	0.56
1969					
Standard hours of work	36.70*	35.15*	1.044	3.77	0.70
Statutory holidays	7.89	9.15	.862	7.52	10.31
Paid vacations (week)	2.54	2.97	.855	10.04	1.12
Hours per day	8.14	7.94	1.025	2.23	2.08
Days per week	5.07	5.0	1.014	3.13	0.17

*Please note that hours of work data for 1969 are substantially lower than those of 1976. The reasons for such a reverse trend are not yet known. It is therefore advisable that one should look at ratio rather than absolute hours of data when interpreting.

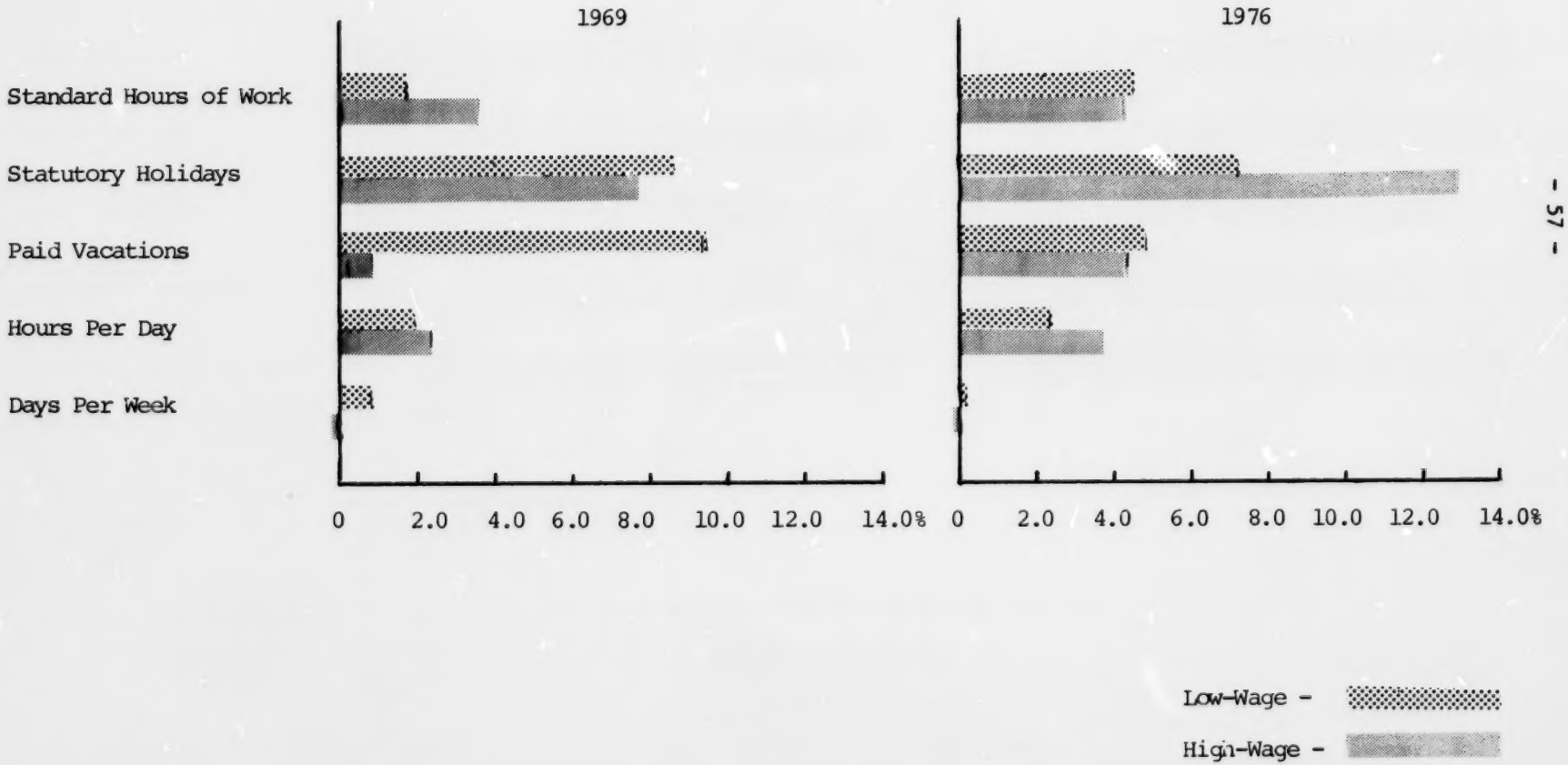
WORKING CONDITIONS VARIABLES
OFFICE EMPLOYEES

COMPARISON OF RATIOS
(Low-Wage Sector / High-Wage Sector)



WORKING CONDITIONS VARIABLES
OFFICE EMPLOYEES

COEFFICIENT OF VARIATION

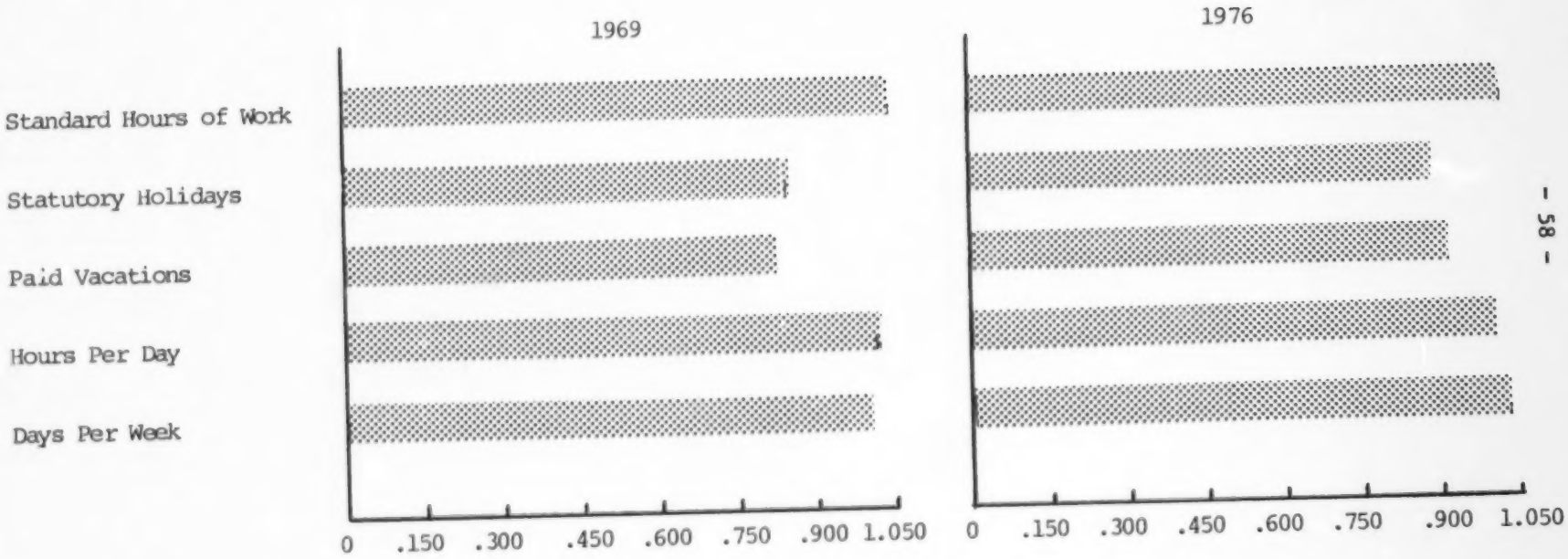


WORKING CONDITIONS VARIABLES

NON-OFFICE EMPLOYEES

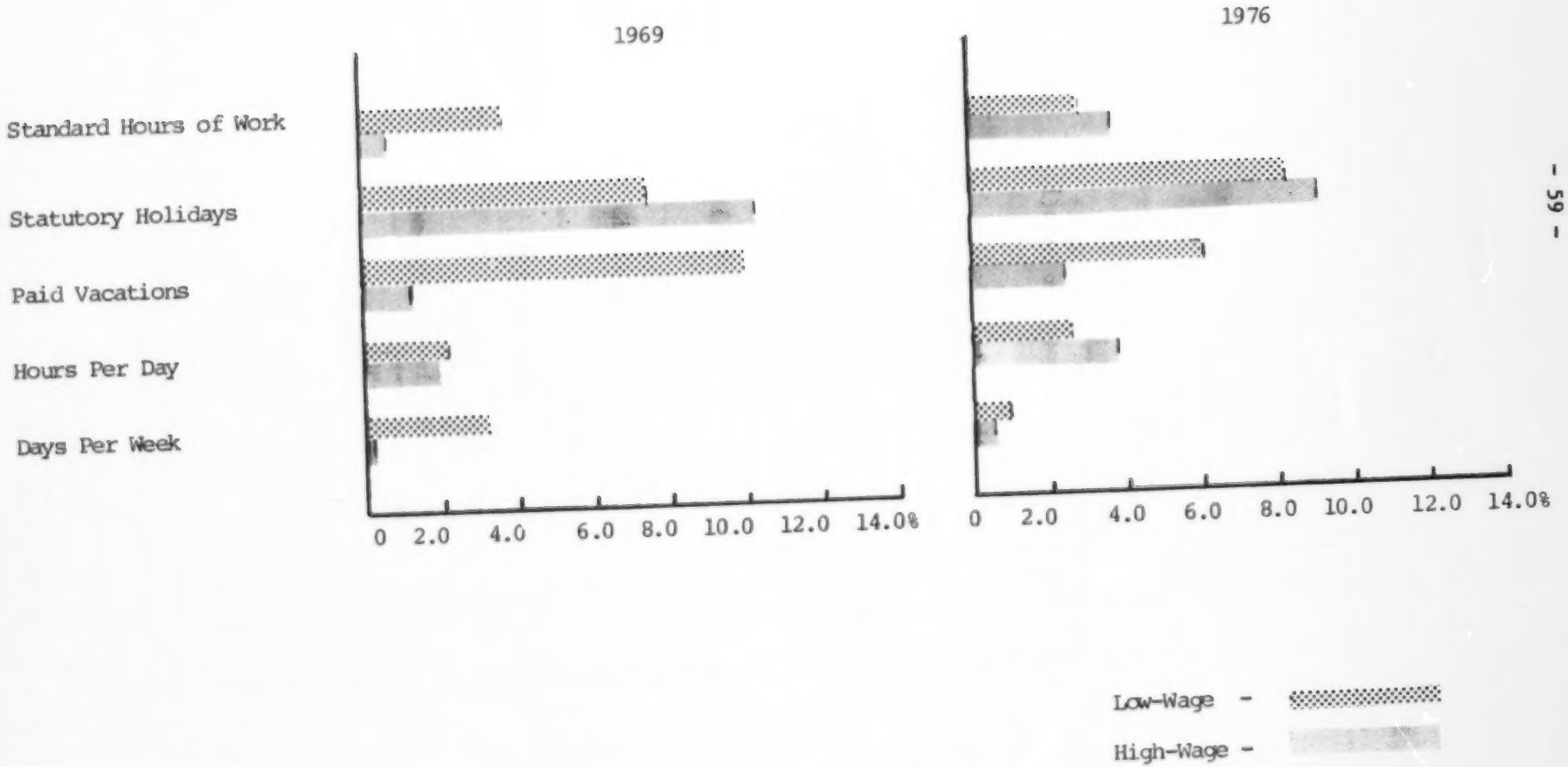
COMPARISON OF RATIOS

(Low-Wage Sector / High-Wage Sector)



WORKING CONDITION S VARIABLES
NON-OFFICE EMPLOYEES

COEFFICIENT OF VARIATION



Appendix II-A

Occupational Characteristics in the Primary (upper-tier) Sector

1. Burner Operator(1)
2. Carpenter Maintenance-M(6)
3. Control Man-M(1)
4. Electrical Repairman-M(6)
5. Instrument Repairman-M(2)
6. Laboratory Tester-M(1)
7. Labourer, Non-production(1)
8. Loader, Liquids-M(1)
9. Maintenance Machinist-M(6)
10. Petroleum Process Operator(1)
11. Petroleum Process Op. Help-(M)(1)
12. Pipe Fitter Maintenance (no sex)(1)
13. Pumpman-M(1)
14. Pumpman Helper-M(1)
15. Stationary Engineer 2ndCL-M(5)
16. Stationary Engineer 3rdCL-M(5)
17. Stationary Engineer 4thCL-M(3)
18. Truck Driver Light and Heavy-M(5)
19. Welder Maintenance (no sex)(1)
20. Drill-press Setup Op.-M(1)
21. Engine-lathe Setup Op.-M(1)
22. Industrial Truck Op.-M(5)
23. Fitter Metal Fabricating-M(1)
24. Labourer Non-production-M(5)
25. Layout Man, Structural Metal-M(1)
26. Metal Fabric Shop-Helper-M(1)
27. Metal Product Assembler-M(1)
28. Metalwork Mach. setup Man-M(1)
29. Metalwork Mach. setup Op.-M(1)
30. Millwright-M(5)
31. Patternmaker, Metal-M(1)
32. Power-shear Op.-M(1)
33. Punch and Shear Machine Op-M(1)
34. Shipping Clerk-M(4)
35. Spray Painter, Rough-M(2)
36. Struct. Metal Fab.-M(1)
37. Struct. and Orn-Metalwork Insp.-M(1)
38. Struc. Steel Erector-M(1)
39. Welder, Maintenance-M(3)
40. Welder, Production Line-M(2)
41. Brewhouse Worker-M(1)
42. Material Handler-General-M(1)
43. Packager, Machine-M(1)
44. Quality Control Test-M(1)
45. Automotive Assembler-(1)

Note: Numbers in brackets are industry observation numbers (total number of industry observations is 10).

Appendix II-A (cont'd)

46. Cutter and Installer Covers-M(1)
47. Final Inspector, Auto-M(1)
48. Mach. Tool Operator-Prod.-M(1)
49. Painter, Brush-M(1)
50. Pipe Fitter, Maintenance-M(3)
51. Sheet Metal Finisher-M(1)
52. Sheet Metal Worker(1)
53. Spray Painter, Finish-M(1)
54. Tool and Die Maker-M(2)
55. Welder, Resistance, Spot-M(1)
56. Welding Mach. Op.-Sub, Arc.-M(1)
57. Bindery Worker-F(1)
58. Bindery Worker-M(1)
59. Compositor-M(1)
60. Cylinder Pressman-M(1)
61. Foreman, Bindery-(1)
62. Foreman, Printing-Press-M(1)
63. Foreman, Typesetting and Comp.-M(1)
64. Linotype Op-M(1)
65. Offset Pressman-M(1)
66. Platen Pressman-(1)
67. Web Pressman, Comp. and Press-M(1)
68. Web Pressman, Lithography-M(1)
69. Charging Machine Op-M(1)
70. Crane Chaser-M(1)
71. Crane Operator-M(1)
72. Finisher-M(1)
73. Furnace Operator-M(1)
74. Heater, Metal-M(1)
75. Hot-steel Roller-M(1)
76. Metal Pourer-M(1)
77. Roughing Mill Operator-M(1)
78. Skip Operator(1)
79. Stoveman-M(1)
80. Chemical Op., Class A-M(1)
81. Chemical Op., Class B-M(1)
82. Chemical Operator Helper-M(1)
83. Chemical Technician-M(1)
84. Tradesman's Helper-M(1)

Appendix II-B

Occupational Characteristics in the Secondary Sector

1. Fish Cleaner and Cutter-F(1)
2. Fish Cleaner and Cutter-M(1)
3. Fish Cleaning-mach. Feeder-M(1)
4. Fish Process Mach. Feeder-M(1)
5. Freezer Man-M(1)
6. Grader, Fish-M(1)
7. Packager Hand-F(1)
8. Tallyman-M(1)
9. Truck-driver, light and heavy-M(2)
10. Boiler Operator-M(1)
11. Cut-off Saw Operator-M(1)
12. Electrical Repairman-M(1)
13. Furniture Assembler, Cl. A-M(1)
14. Furniture Assembler, Cl-B-M(1)
15. Furniture Assembler, Metal-M(1)
16. Furniture Packer-M(1)
17. Gluer, Assembly line-M(1)
18. Labourer, Non-production(1)
19. Material Handler, heavy-M(1)
20. Planer Operator-M(1)
21. Ripsaw Operator-M(1)
22. Sander Hand-M(1)
23. Sander, Machine-M(1)
24. Sewing Machine Op-F(1)
25. Shaper Op. operate only-M(1)
26. Shaper Op. set up and operate-M(1)
27. Shipping Clerk-M(5)
28. Spray Painter Finish-M(1)
29. Stationary Engineer, 4th Cl-M
30. Upholsterer, All Round-M(1)
31. Veneer Matcher-M(1)
32. Welder Production Line-M(1)
33. Cutter, Hand-M(4)
34. Cutter, Portable machine-M(2)
35. Hand Sewer-F(3)
36. Inspector, Garment-F(4)
37. Pocket-maker-F(3)
38. Pocket-maker-M(2)
39. Presser, Hand-F(3)
40. Presser, Hand-M(3)
41. Presser, Machine-F(3)
42. Presser, Machine-M(3)
43. Sewing Machine Op.-F(4)
44. Sewing Machine Op.-M(2)
45. Tailor(2)

Note: Numbers in brackets are industry observation numbers (total number of industry observations is 17).

Appendix II-B (cont'd)

46. Tailoress(2)
47. Trimmer, Hand-F(4)
48. Boarder-F(1)
49. Dye-tub Tender-M(1)
50. Hosiery Pairer-F(1)
51. Knitting Machine Fixer-M(1)
52. Looper-F(1)
53. Packager, Hand-F(1)
54. Seamless-hosiery Knitter-F(1)
55. Seamless-hosiery Knitter-M(1)
56. Stocking Inspector-F(1)
57. Cutter, Hand-F(1)
58. Garment Folder-F(1)
59. Garment Folder-M(1)
60. Inspector Garment-M(1)
61. Knit Goods Mender-F(1)
62. Knitting Machine Fixer-M(1)
63. Knitting Machine Tender-F(1)
64. Knitting Machine Tender-M(1)
65. Packager, Hand-M(1)
66. Pressing Machine Feeder-F(1)
67. Pressing Machine Feeder-M(1)
68. Bed Laster-M(1)
69. Beveler-F(1)
70. Binding Stitcher-F(1)
71. Burnisher-M(1)
72. Cementer, Hand-M(1)
73. Counter and Upper Tacker-M(1)
74. Fancy Stitcher(1)
75. Fastener, Shoe Parts-M(1)
76. Lining Cutter-M(1)
77. Lining Maker-F(1)
78. Outsole Cutter-M(1)
79. Pullover Laster-M(1)
80. Shoe Cleaner-M(1)
81. Side Laster-M(1)
82. Table Worker-F(1)
83. Top Stitcher-F(1)
84. Trimmer, Shoe Parts-M(1)
85. Upper Cutter-M(1)
86. Vamper-F(1)